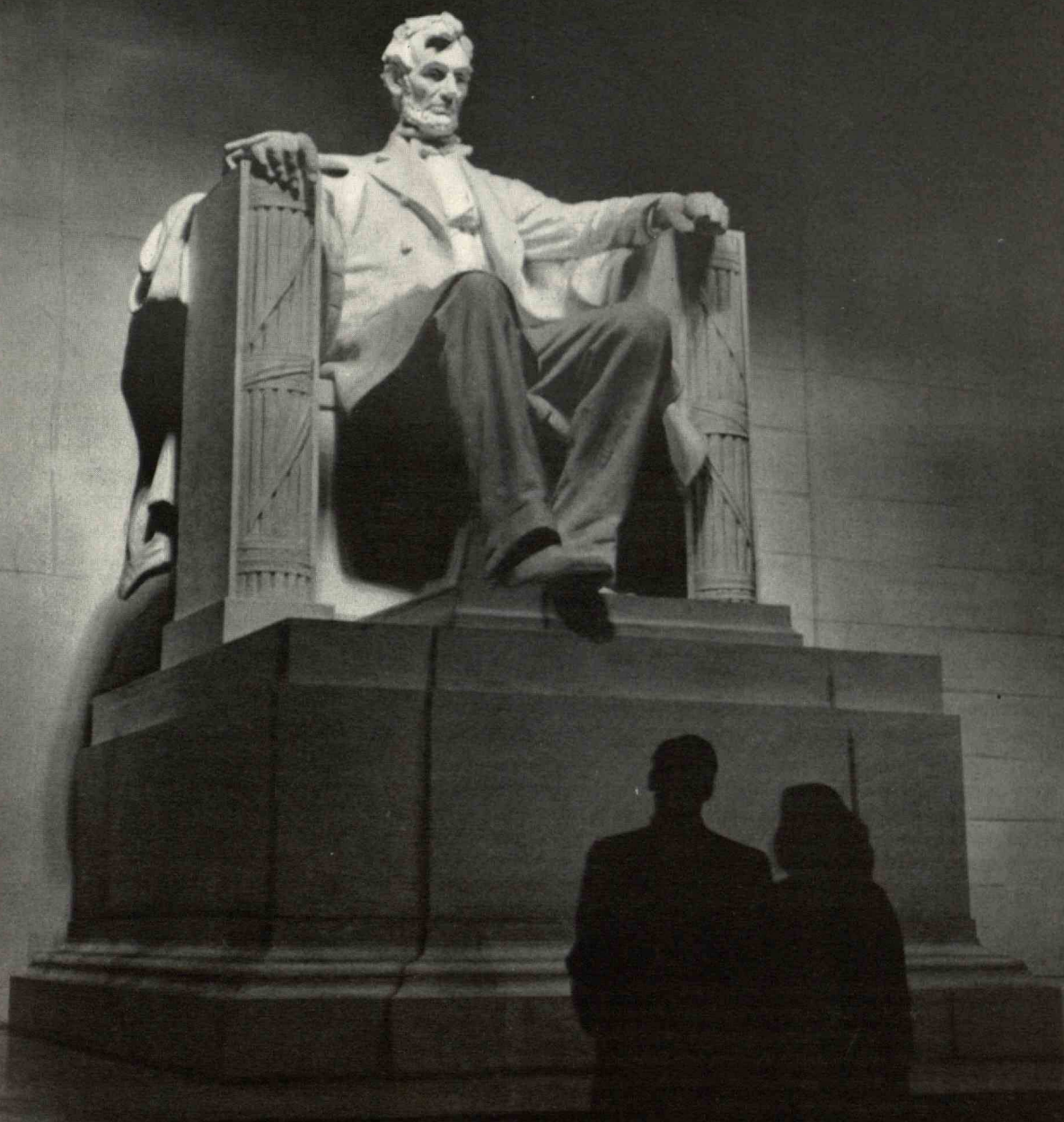


# TECHNOLOGY

## REVIEW *February* 1953

IN THIS TEMPLE  
AS IN THE HEARTS OF THE PEOPLE  
FOR WHOM HE SAVED THE UNION  
THE MEMORY OF ABRAHAM LINCOLN  
IS ENSHRINED FOREVER



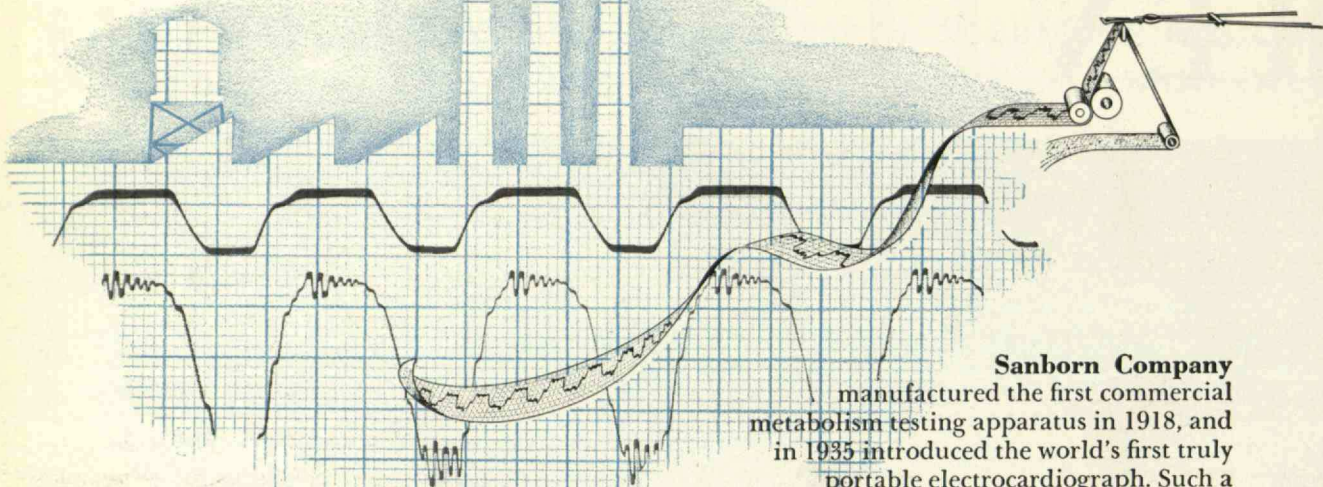
# technology review

Published by MIT

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[permissions@technologyreview.com](mailto:permissions@technologyreview.com).



# *pioneers in Precision*



**Sanborn Company** manufactured the first commercial metabolism testing apparatus in 1918, and in 1935 introduced the world's first truly portable electrocardiograph. Such a background of pioneering in the medical field was not long to go unrecognized by the industrial field, and today many industrial research recording problems are being solved with Sanborn equipment.

## **Miniature Precision Bearings**

supply the same operational characteristics commonly associated with larger prototypes. Wherever design problems concerning unusual operating conditions are present . . . extreme temperature . . . shock . . . continuous high load capacity . . . limited space in instrument miniaturization projects . . .

**MPB** ball bearings supply a vital need.

For more than 20 years, the originators and pioneer developers of ball bearings in this size range (1/10" to 5/16" o.d.), **MPB** supplies ultra quality miniature ball bearings to more than three thousand discriminating users. Exclusive and exacting production procedures — including full grinding, lapping, honing and/or burnishing to ABEC 5 tolerances or better — result in the type of quality which permits installation of these ball bearings in control and recording instruments of highest possible performance standards. **MPB** ball bearings are torque tested, ultrasonically cleaned, supplied in specific clearances, and classified within the tolerances for prompt assembly and maximum service. More than a million **MPB** ball bearings have been installed in many unusual and distinctive devices.

The most extensive engineering knowledge in miniature ball bearing application is available to you. Also request Catalog and survey sheet TR2

*Through extensive expansion, the production of these ultra quality bearings has been considerably increased. However; the continuing trend toward miniaturization, plus a constant demand for better quality bearings, has temporarily limited an immediate supply. Further expansion will soon enable us to serve you promptly.*

## **Miniature precision Bearings**

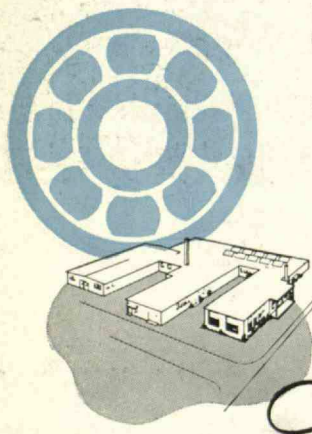
Incorporated



Keene, New Hampshire

**"Pioneer Precisionists to the World's foremost Instrument Manufacturers"**

**save  
space  
weight  
friction**





# Lifting words off newsprint

How precise can modern grinding be?

So precise that in demonstration the newsprint can be ground from one side of a news page without disturbing the paper itself or the newsprint on the other side. The printed surface is removed with a Behr-Manning coated abrasive drum cover. A roll, precision ground with Norton abrasive grinding wheels, holds the paper in exact position to a fraction of a "hair's breadth" during the grinding process.

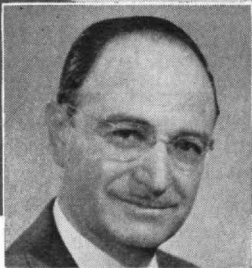
Coated abrasives by Behr-Manning and grinding wheels and abrasives by Norton are performing grinding "miracles" vital to the performance of such products as jet planes, your automobile, your refrigerator and other home appliances.

Many of today's finest products would not have been economically possible but for Norton and Behr-Manning abrasive products. These products add value to every product they touch.

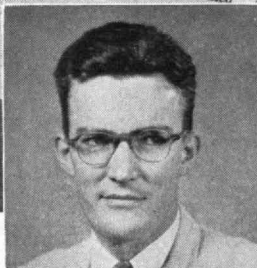
**NORTON COMPANY** makes abrasives, grinding wheels, pulpstones, refractories, grinding and lapping machines, non-slip floors, Norbide grain and molded products. Norton Company, Main Office and Works, Worcester 6, Mass.

**BEHR-MANNING** makes abrasive paper and cloth, oilstones, abrasive specialties, pressure-sensitive tapes. Behr-Manning Corporation, Division of Norton Company, Troy, New York.

**Plants, Distributors and Dealers the world over**



FRANK CRUPI arrived at his present position of Quality Control Manager for Behr-Manning the know-how way. He has made many original improvements in the company's coated abrasives over the past 37 years.



OSGOOD J. WHITTEMORE, Norton Ceramic Research Engineer since 1945, noted for his work in developing pure oxide refractories such as Fused Stabilized Zirconia which can withstand temperatures up to 4700° F.



*Making better products to make other products better*

# NORTON • BEHR-MANNING

# What GENERAL ELECTRIC People Are Saying

G. E. HENRY

*General Engineering Laboratory*

**CLEANING WITH SOUND:** It is now some twenty-five years since Wood and Loomis first demonstrated the remarkable physical and chemical effects of high frequency, high power, sound in liquids. People have been busy, during this time, looking for ways to turn these effects to practical advantage, especially in the chemical industry. During the last three or four years, however, the most notable advances have been made not for the chemical producer, but for the metal-working industries—specifically for those engaged in small-parts fabrication. High power ultrasonics offers the best means yet devised for cleaning these small parts.

An instrument ball bearing, a small pump fitting, or some other precision made work piece is immersed in a solvent; a high frequency sound wave beamed through the solvent strikes the metal surface and removes almost instantly any film of oil or grease, together with dirt, chips, or other foreign matter.

There is no longer any question of the superiority of ultrasonic cleaning when the characteristics of the work piece and the economics of production are favorable for the application of the new method. The great question remaining is how far the method can be extended to include different kinds of parts—how large a proportion of the total metal cleaning business can be profitably handled with ultrasonics.

*IRE, Evansville—Owensboro Chapter  
Owensboro, Ky.*



W. R. G. BAKER

*Electronics Division*

**ELECTRONICS TOMORROW:** Human qualities being what they are, man has always had a great interest in the future.

What electronics will do for us tomorrow, or next year, or 50 years from now depends only partially on the state of the art, or the advancement of our knowledge about electronics. It depends upon what

we know about electronics, certainly, but it also depends greatly upon our economic circumstances and our political atmosphere.

Broadly, this is the promise that electronics holds for us. It offers us a means to increase productivity and therefore our standard of living. It offers us quicker and better methods of communications in all areas of industry, commerce, education and entertainment. It offers us a way of making better use of our skills. It offers us a way of bolstering our defenses against aggression.

These promises will not turn into reality automatically and without effort on our part.

They call for investment on our part not only of capital funds but of human resources. We must make it possible for greater numbers of young men and women to receive the education and training that will permit them to participate in this more highly technical civilization and to contribute to its continued growth. We must continue to invest in research, to broaden the basic knowledge on which we can build a stronger economy.

There is one other area in which engineers can make a contribution to the advancement of this country's strength and its future. Science cannot guard against the intellectual germ warfare being carried on by the proponents of the "something-for-nothing-isms." Engineers cannot design electronic devices or atomic weapons to protect against this type of infiltration. But engineers can make certain that their economic and political education advances in step with their technical education. The ability to separate truth from propaganda is as important as the ability to separate scientific fact from misinformation. Your future may depend on your ability to do both.

*Institute of Radio Engineers  
Washington, D. C.*

J. J. FITZGERALD

*Knolls Atomic Power Laboratory*

**SAFETY IN NUCLEAR OPERATIONS:** Waste gases as finally discharged into the air, from the Knolls Atomic Power Laboratory at Schenectady, N. Y., are no more radioactive than the normal surrounding atmosphere and in many instances are even less radioactive.

These gases are discharged through a 100-foot stack, and are constantly monitored to make sure that the concentration of radioactive material is kept well below permissible limits.

Constant air monitors are located at selected sites to check the radioactive concentrations at various points near ground level. Plant samples also are analyzed on a regular schedule to evaluate the accumulation of radioactivity on vegetation.

Waste radioactive gases and smokes from the working areas are first passed through a "scrubber," in which a caustic solution washes out the larger radioactive particles as well as the more volatile components. Next they go through a high-efficiency filtering system, which removes more than 99.9 per cent of the small amount of radioactive material left. The air that remains is diluted, from a thousand to ten thousand times, with filtered air from the ventilating system of the building, and then is discharged through the stack.

Normal atmosphere contains measurable but harmless quantities of radioactive elements, and these produce radioactive particles which are also removed by the filtering process.

As a result, in many instances the effluent from our stack is cleaner than the atmosphere itself.

*AIEE  
New York City*

*You can put your confidence in—*  
**GENERAL  ELECTRIC**



ME...

an AIRCRAFT engineer?

But I haven't majored in  
aeronautical engineering

That doesn't matter.  
Lockheed can train you...  
at full pay!



It's your aptitude, your knowledge of engineering principles,  
your degree in engineering that count.

Those—plus the opportunity Lockheed is offering you—are all you need for a  
career as an aircraft engineer. In Lockheed's special program for engineering  
graduates, you may go back to school, or you may convert to aircraft work by  
doing—on-the-job training. But whichever it is, you receive full pay while learning.

But Lockheed offers you more than a career. It offers you a new life, in an area  
where living conditions are beyond compare. Outdoor living prevails the  
year-round. Mountains, beaches are an hour from Lockheed.

See your Placement Officer today for the details on Lockheed's Aircraft Training Program  
for engineers, as well as the better living conditions in Southern California.

If your Placement Officer is out of the illustrated brochures describing living and  
working conditions at Lockheed, write M. V. Mattson, Employment Manager

*Lockheed* Aircraft Corporation  
Burbank, California

This Plane made History



The P-38 Lightning—first 400 mile  
per hour fighter-interceptor, the  
"fork-tailed Devil" that helped  
win World War II.

This Plane is making History

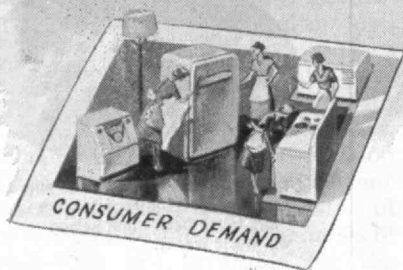
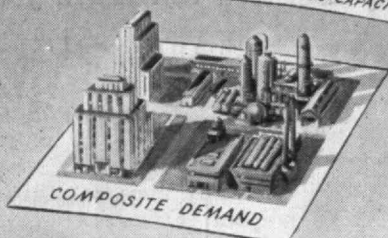


The Super Constellation—larger, faster,  
more powerful; the plane that bridges  
the gap between modern air transport  
and commercial jet transport.

This Plane will make History

The jet of  
the future—the plane  
you will help create—  
belongs here.

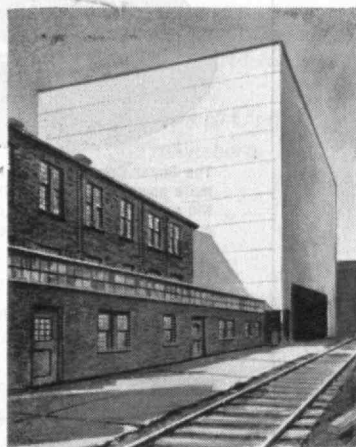
This plane—which exists only in  
the brain of an engineer like yourself  
—is one reason there's a better  
future for you at Lockheed. For  
Lockheed will always need engineers  
with ideas, engineers with  
imagination, engineers who build  
the planes that make history.



## LOOKING AHEAD WITH Westinghouse

For Westinghouse Electric Corporation, Stone & Webster Engineering Corporation recently made a detailed study of 5 different plans for expansion of the client's electric generator manufacturing capacity.

The work included an independent review of the estimated growth in demand for generators (both hydro and steam) through 1970; determination of the probable maximum economical size of generators; a study of present manufacturing conditions and the capacity desired; a study of methods for increasing manufacturing facilities; description and examination of plans; method of operations under the recommended plan; and a step-by-step program of generator fabrication, with provision for temporary procedures to be followed while the expansion work is in progress.



*First step in expansion of manufacturing facilities at Westinghouse Electric Corporation's plant, East Pittsburgh, Pennsylvania*



Stone & Webster Engineering Corporation was subsequently retained to design and build the new facilities.

**STONE & WEBSTER ENGINEERING CORPORATION**

A SUBSIDIARY of STONE & WEBSTER, INC.



*Cabot grades of Blacks*

## **Cabot manufactures the world's Greatest Range of CARBON BLACKS**

Since 1882, the name of Cabot has been synonymous with best quality carbon black. The world looks to Cabot also for production of its most complete range of grades—more than forty-two different kinds of carbon black developed and produced for specific use within the rubber, paint, ink, varnish, lacquer, plastics and paper industries.

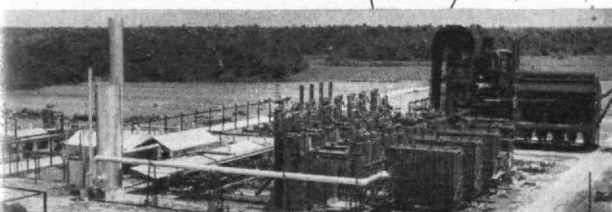
To manufacture these blacks, Cabot operates many plants, some utilizing natural gas, others liquid hydrocarbon as raw materials. Use of the raw material is dependent upon whether the channel, furnace or thermal process is employed. Development of the oil process of manufacture has made possible the expansion of Cabot plants from the Southwestern part of this country to places distant from natural gas fields—to Sarnia, Ontario, Canada; and to Ellesmere Port, near Liverpool, England.

Cabot blacks give rubber tires the maximum tire mileage so necessary to economical motor travel . . . impart blackness and glossiness so necessary to the successful marketing of many other products.

Cabot has the black to do the specific job required by manufacturers of highest quality or lowest cost articles. Perhaps you, too, should investigate the opportunity for use of a Cabot black in your product.

### **GODFREY L. CABOT, INC.**

77 FRANKLIN STREET, BOSTON 10, MASS.



CABOT for CARBON BLACKS • PLASTICIZERS • PINE TAR • PINE TAR OIL  
DIPENTENE • SOLVENTS • SOFTENERS • COKE • WOLLASTONITE • CLAY  
NATURAL GAS • NATURAL GASOLINE • OIL PUMPING EQUIPMENT • CHARCOAL



# GRAVER *CENTER-WEIGHTED FLOATING ROOF TANKS* FOR NEW PLATTE PIPE LINE



Guernsey, Wyoming:  
two Graver 100' x 40'  
Center-Weighted Floating Roof Tanks.

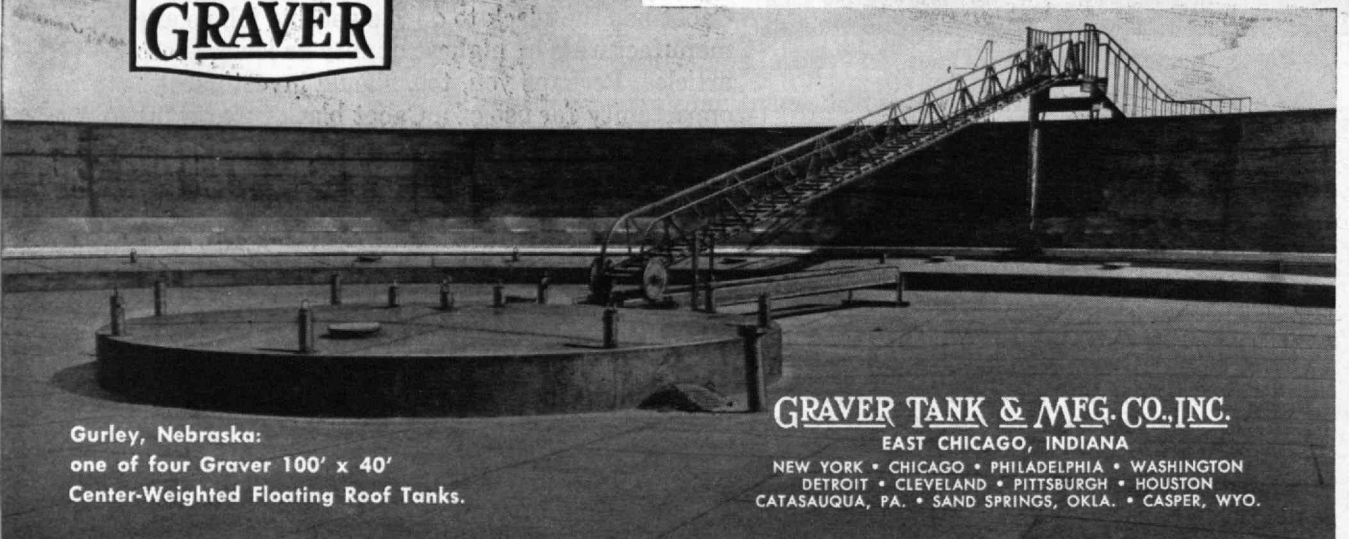


Salisbury, Missouri:  
four Graver 134' x 48'  
Center-Weighted Floating Roof Tanks.



To provide for corrosion-resistant storage of crudes along its 1056-mile course from Wyoming to Wood River, Ill., the new Platte Pipe Line uses Graver Center-Weighted Floating Roof Tanks at its Guernsey and Gurley injection stations and at its Salisbury pumping station — a total capacity of more than 800,000 barrels.

This new 20-inch line, designed to transport 110,000 b/d from Rocky Mt. fields to refineries, must handle 25 different crudes. Graver's Center-Weighted Floating Roof design — with its inward sloping deck in full contact with the stored crude — assures both the absence of corrosion and the retention of volatile hydrocarbons, since no space exists beneath the single deck for air and vapor to combine and induce corrosion.



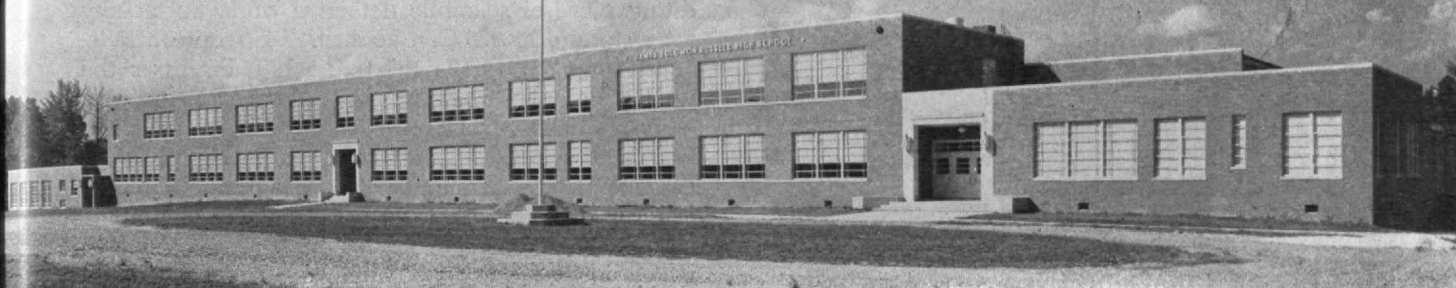
Gurley, Nebraska:  
one of four Graver 100' x 40'  
Center-Weighted Floating Roof Tanks.

**GRAVER TANK & MFG. CO., INC.**

EAST CHICAGO, INDIANA

NEW YORK • CHICAGO • PHILADELPHIA • WASHINGTON  
DETROIT • CLEVELAND • PITTSBURGH • HOUSTON  
CATASAUQUA, PA. • SAND SPRINGS, OKLA. • CASPER, WYO.

# Nature Controls the Heat in these Schools



James Solomon Russell School, Brunswick County, Va. Total square footage — 67,356.  
Cost — \$524,870. Heating Contractors: W. J. Bloomfield & Son, Inc., Farmville, Va.

**Dixon & Norman, Virginia architectural firm specializing in schools, specify Webster Moderator Systems for efficient heat in open-plan buildings fed by long steam lines.**

"Nature makes the weather, let her operate the controls" — so say Dixon & Norman, Richmond architects and engineers. For comfort and economy, in all of their larger schools, they use centrally controlled, continuous flow steam heating systems.

"Many of our schools are also used for community activities," Dixon & Norman point out. "Classrooms are larger than average and auditoriums, gymnasiums and

shop areas are in separate wings. Despite long steam lines, there is balanced heat distribution because the Moderator System delivers heat evenly and rapidly to every section of a building."

For information about Webster Products for school heating, call the Webster Representative or write us.

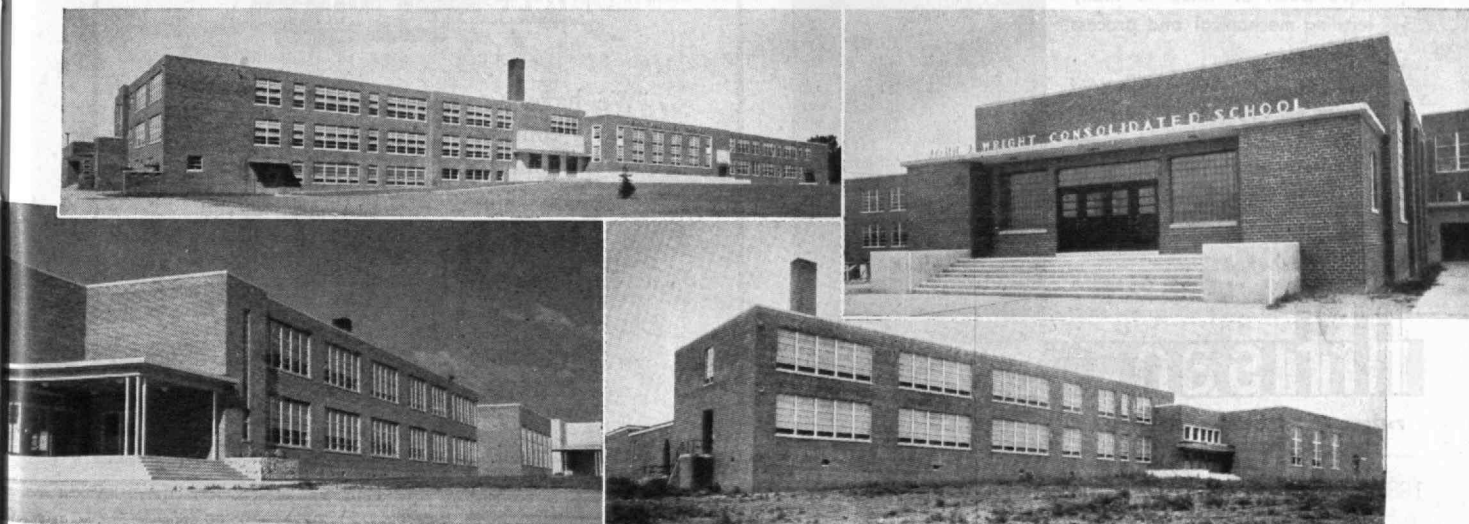
Address Dept. TR-2.

**WARREN WEBSTER & COMPANY**

Camden 5, N. J. Representatives in Principal U. S. Cities  
In Canada, Darling Brothers, Limited, Montreal

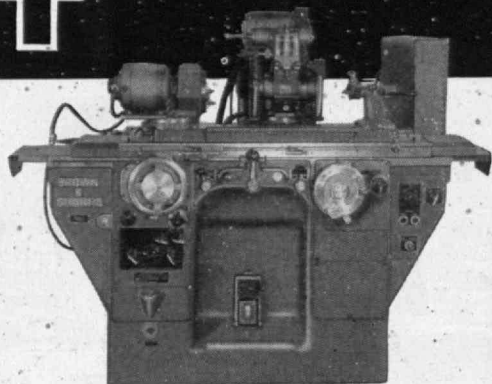
**WEBSTER  
MODERATOR  
SYSTEM  
OF STEAM HEATING**  
"Controlled by the weather"

TOP LEFT: Hermitage High School, Richmond. Heating Contractors: W. H. White, Plumbing & Heating, Richmond. TOP RIGHT: John J. Wright School, Spotsylvania County, Va. Heating Contractors: W. J. Bloomfield & Son, Inc. BOTTOM LEFT: Montevideo High School, Montevideo, Va. Heating Contractors: J. H. Cothran Co., Inc., Altavista, Va. BOTTOM RIGHT: Union High School, Caroline County, Va. Heating Contractors: J. H. Cothran Co., Inc.





# 4 Completely NEW Universal Grinding Machines



## "Productioneered" for new grinding flexibility and high output

The many exclusive features of the new, ultra-modern Brown & Sharpe Universal Grinding Machines provide exceptional grinding flexibility, rigidity, and accuracy. Instant combining of operating functions into automatic cycles extends the use-

fulness of this equipment beyond the toolroom and job shop to many production applications. Four sizes: No. 1 (illustrated), and Nos. 2, 3 and 4.

Write for detailed Bulletins. Brown & Sharpe Mfg. Co., Providence 1, R.I., U.S.A.

# Brown & Sharpe

**ARTISAN  
METAL PRODUCTS INC  
EQUIPMENT FABRICATORS  
WALTHAM  
MASS U S A**

THE HALLMARK  
of  
SUPERIOR  
EQUIPMENT

Artisan engineers and workmen are skilled in the techniques of metal working. Their combined knowledge and experience in engineering and building special equipment and machinery have been of value to many leading mechanical and process industries.

Write for a copy of "Process Equipment". For a qualified engineer to call to discuss your equipment requirements, telephone Waltham 5-6800 or write to: — James Donovan, '28, General Manager.

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CONDENSERS AND  
HEAT EXCHANGERS  
DISTILLATION  
EQUIPMENT  
EXPERIMENTAL  
EQUIPMENT  
EVAPORATORS  
MIXERS  
JACKETED KETTLES  
PIPE, PIPE COILS,  
AND BENDS  
REACTORS  
SPECIAL MACHINERY  
TANKS

**Artisan** METAL PRODUCTS, INC.

73 POND STREET, WALTHAM, (Boston 54) Mass.

## THE TABULAR VIEW

**Vegetable.** — Are all plants closely related in an evolutionary pattern that can be easily followed, or may different plants result from separate creation? The attempt to answer such questions makes an interesting piece of scientific detective work. So, at any rate, states ERNEST C. CROCKER, '14, whose article, "Following a Cold Trial," (page 199) discusses the work of botanists in working over old clues to discover plant relations. Mr. Crocker is a pioneer in the scientific measurement of flavor and odor, and, indeed, has carved out such a name for himself in this field that he is invariably associated with these subjects. But he has also maintained a lifelong interest in botany in which he has also made noteworthy contributions, partly as an avocation and partly as an adjunct to his primary work. Following his graduation from the Institute in 1914, Mr. Crocker held positions as chemist in industry for five years before returning to M.I.T. as a research chemist in applied chemistry. Since 1922 he has been a member of the staff of Arthur D. Little, Inc., a consulting research organization in Cambridge.

**Animal.** — The human animal is a strange creature. He has made outstanding progress in the mastery of the physical sciences but is conspicuously less able to manage human affairs. Now that the physical sciences have come to play a major role in man's daily life, the man in the street is suddenly called upon to participate in the administration of a national science policy — a task for which he is eminently unsuited. It is the task of scientists, engineers, and science writers to interpret to the layman the philosophy and significance of scientific progress, as JOHN I. MATTILL points out in "Science Publicity — Challenge and Dilemma" (page 203). Mr. Mattill received the B.A. degree from Carleton College in 1943 and the M.A. degree from the (Concluded on page 190)



"We have never contracted for work with a concern that has shown greater dependability, better methods of economy, speed and quality of performance."

Air Reduction Company

**W. J. BARNEY CORPORATION**

Founded 1917

101 Park Avenue, New York

**INDUSTRIAL CONSTRUCTION**

Alfred T. Glassett, '20, President





## BEYOND THE HORIZON....

Most of the current alloys developed for engineering use at elevated temperatures contain Molybdenum.

As stresses and temperatures—such as those used for marine propulsion power plants—increase, it is certain that the alloys which make this possible will rely more and more upon their Molybdenum content.

Climax furnishes authoritative engineering data on Molybdenum applications.

**Climax Molybdenum Company**  
500 Fifth Avenue • New York City 36 • N.Y.

## YOU BENEFIT 4 WAYS

Users of Curtis Universal Joints realize a fourfold benefit:

### CURTIS UNIVERSAL JOINTS

- ① 14 sizes —  $\frac{3}{8}$ " to 4" O.D. in stock at all times for immediate shipment; bored or unbored hubs.
- ② Curtis quality standards surpass the U.S. A.F. specifications and are used by every branch of the Armed Services.
- ③ Simple construction; fewer parts make assembly and disassembly easy, mean longer life.
- ④ Each part of specially selected steel, individually heat treated for a specific purpose—efficient service for a longer period of time.

#### Special Applications

Facilities and engineering skill for 6" diameter joints or other special specification jobs are immediately available.

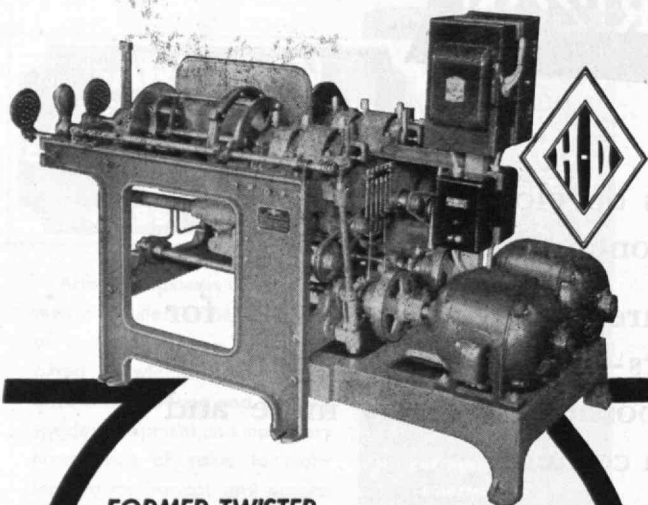
Not sold through distributors: write direct for free engineering data and price list.

### CURTIS UNIVERSAL JOINTS

8 BIRNIE AVENUE • SPRINGFIELD, MASS.

As near to you as your telephone

A MANUFACTURER OF UNIVERSAL JOINTS SINCE 1919



### FORMER-TWISTER — AN "H-D" CONTRIBUTION To The TWINE AND ELECTRICAL INDUSTRY

You may benefit by our eighty years experience in engineering and building standard and special machines for divers twisting operations. • We make a complete line of twisters, formers, layers and ropers for the yarn, cord and rope industries; bunchers and stranders for the wire industries. If you process jute, manila, hemp, wire, thread, paper or synthetics, it will pay you to write for our specialized bulletins, today. Address Dept. T-1.

### HASKELL-DAWES MACHINE COMPANY, Inc.

2231 E. Ontario Street  
PHILADELPHIA 34, PA.

## THE TABULAR VIEW

(Concluded from page 188)

State University of Iowa in 1948. He was science writer for the State University of Iowa from 1946 to 1948. Mr. Mattill has been assistant director of the M.I.T. News Service since 1948, and in 1952 also became director of publications. The drawings for Mr. Mattill's article were made by Henry B. Kane, '24, Director of the Alumni Fund.

**Mineral.** — Of all the minerals, gold has been held in the highest esteem by man throughout the ages, for its indestructibility, appearance, desirable physical properties, and its occurrence in nature in nearly pure, metallic form. Untold wars and misery have been caused by man's desire to possess this precious metal, and possession has not always been marked by happiness. The role of gold in civilization is reviewed by metallurgist CARLE R. HAYWARD, '04, Professor of Process Metallurgy, Emeritus, whose article "Gold in Fact, Fiction, and Finance" appears on page 207. Born in Yankton, S.D., Professor Hayward was graduated from M.I.T. in 1904 and spent two years as science instructor at Bellows Free Academy in St. Albans, Vt. He joined the Institute's instructing staff in 1906 and has since been associated with the Department of Metallurgy. He has long been a consultant in his field and has written extensively in the field of metallurgy, particularly on copper, lead, and zinc.

NEWTON WALTHAM WATERTOWN

**RIGHT HERE**  
(near Cambridge)

AT

QUINCY BEDFORD

**RAYTHEON**

*you may well establish*  
**YOUR CAREER IN ENGINEERING**

Research and development opportunities abound in the great and growing fields of

RADAR  
ELECTRON TUBES  
CATHODE RAY TUBES  
COMMUNICATIONS  
GUIDED MISSILES  
MAGNETRONS

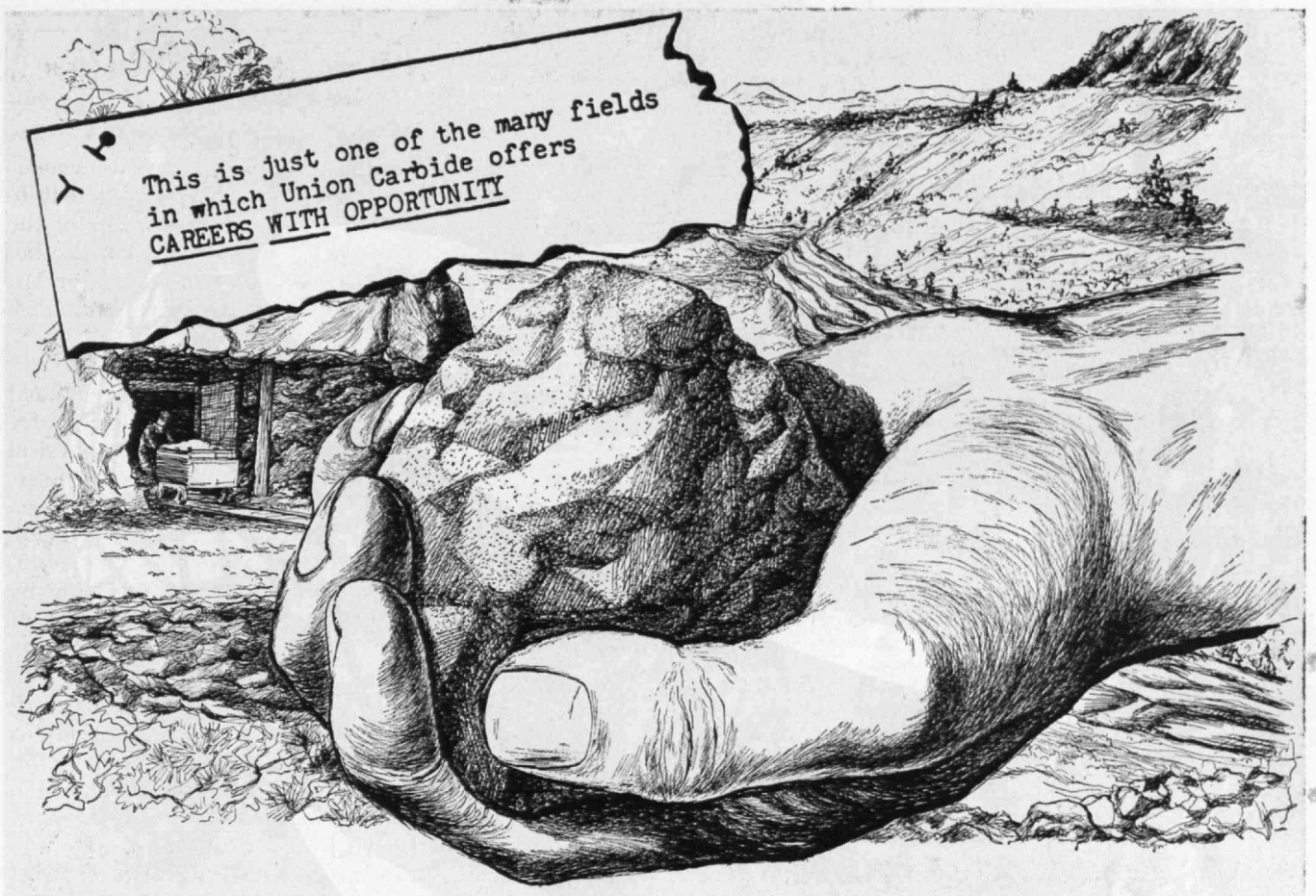
KLYSTRONS  
TRANSISTORS  
SERVOMECHANISMS  
COMPUTERS  
ULTRASONICS  
UNDERWATER SOUND

PRODUCTION,  
QUALITY CONTROL, DESIGN, AND AUTOMATION

**BOOKLET**— picturing and describing the many and varied Raytheon career opportunities may be picked up at the M.I.T. Placement Office, Room 1-173, or will be mailed on request.

**RAYTHEON MANUFACTURING COMPANY**  
WALTHAM 54, MASSACHUSETTS





This is just one of the many fields  
in which Union Carbide offers  
CAREERS WITH OPPORTUNITY

## Promise of a golden future

Yellow uranium ore from the Colorado Plateau

is helping to bring atomic wonders to you

Long ago, Indian braves made their war paint from the colorful sandstones of the Colorado Plateau.

**THEY USED URANIUM**—Their brilliant yellows came from carnotite, the important uranium-bearing mineral. Early in this century, this ore supplied radium for the famous scientists, Marie and Pierre Curie, and later vanadium for special alloys and steels.

Today, this Plateau—stretching over parts of Colorado, Utah, New Mexico, and Arizona—is our chief domestic source of uranium. Here, new communities thrive; jeeps and airplanes replace the burro; Geiger counters supplant the divining rod and miner's hunch.

From hundreds of mines that are often just small tunnels in the hills, carnotite is hauled to processing mills. After the vanadium is extracted, the uranium, concentrated in the form of "yellow-cake," is shipped to atomic energy plants.

**A NEW ERA BECKONS**—What does atomic energy promise for you? Already radioactive isotopes are working wonders in medicine, industry, and agriculture. In atomic en-

ergy, scientists also see a vision of unknown power—which someday may heat and light your home, and propel submarines, ships, and aircraft. The Indian's war paint is on the march again—toward a golden future.

**UCC TAKES AN IMPORTANT PART**—The people of Union Carbide locate, mine, and refine uranium ore. They also operate for the Government the huge atomic materials plants at Oak Ridge, Tenn., and Paducah, Ky., and the Oak Ridge National Laboratory, where radioisotopes are made.

**STUDENTS and STUDENT ADVISERS:** Learn more about the many fields in which Union Carbide offers career opportunities. Write for the free illustrated booklet "Products and Processes" which describes the various activities of UCC in the fields of ALLOYS, CARBONS, CHEMICALS, GASES, and Plastics. Ask for booklet B-2.

# UNION CARBIDE AND CARBON CORPORATION

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UCC's Trade-marked Products of Alloys, Carbons, Chemicals, Gases, and Plastics include

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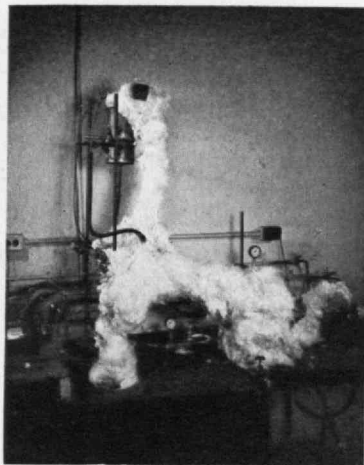
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— Shakespeare

# THE TECHNOLOGY REVIEW

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Pen Drawing by Sidney L. Kaye, '30

Washington Monument, Boston Public Gardens

"Happily — the Government of the United States, which gives to bigotry no sanction, to persecution no assistance, requires only that they who live under its protection should demean themselves as good citizens, in giving it on all occasions, their effective support."—George Washington

# THE TECHNOLOGY REVIEW

Vol. 55, No. 4



February, 1953

## The Trend of Affairs

### *Lean Horse — Long Race*

THE American Public Health Association, at its most recent annual meeting, held a session entitled "America's Number One Public Health Problem." The topic? Obesity! That obesity shortens the life span and increases the incidence of several specific illnesses has been categorically established, not only by animal experiments but also by extensive and reliable statistics on human beings. Indeed overweight has been characterized by one group of experts as a "twilight zone between health and disease."

Obesity is the paradox of modern public health. While improving economic conditions have decreased the incidence of some diseases through better sanitation, less crowded housing, and improved nutrition, higher incomes have *increased* the incidence of obesity by affording the opportunity for overeating, the sole recognized cause of overweight. Hence obesity prevention receives much current emphasis in the educational activities of public health agencies. Also scientific studies of overweight have accelerated and intensified in recent years.

Obesity is usually assessed by comparing weight with height and body structure type, using height-weight tables that have been compiled on the basis of long statistical experience. It is also possible to estimate fatness directly, by such procedures as skin fold measurements. This measurement is done by lifting a fold of skin at a particular site of the body, and gauging with calipers the thickness of the tissues.

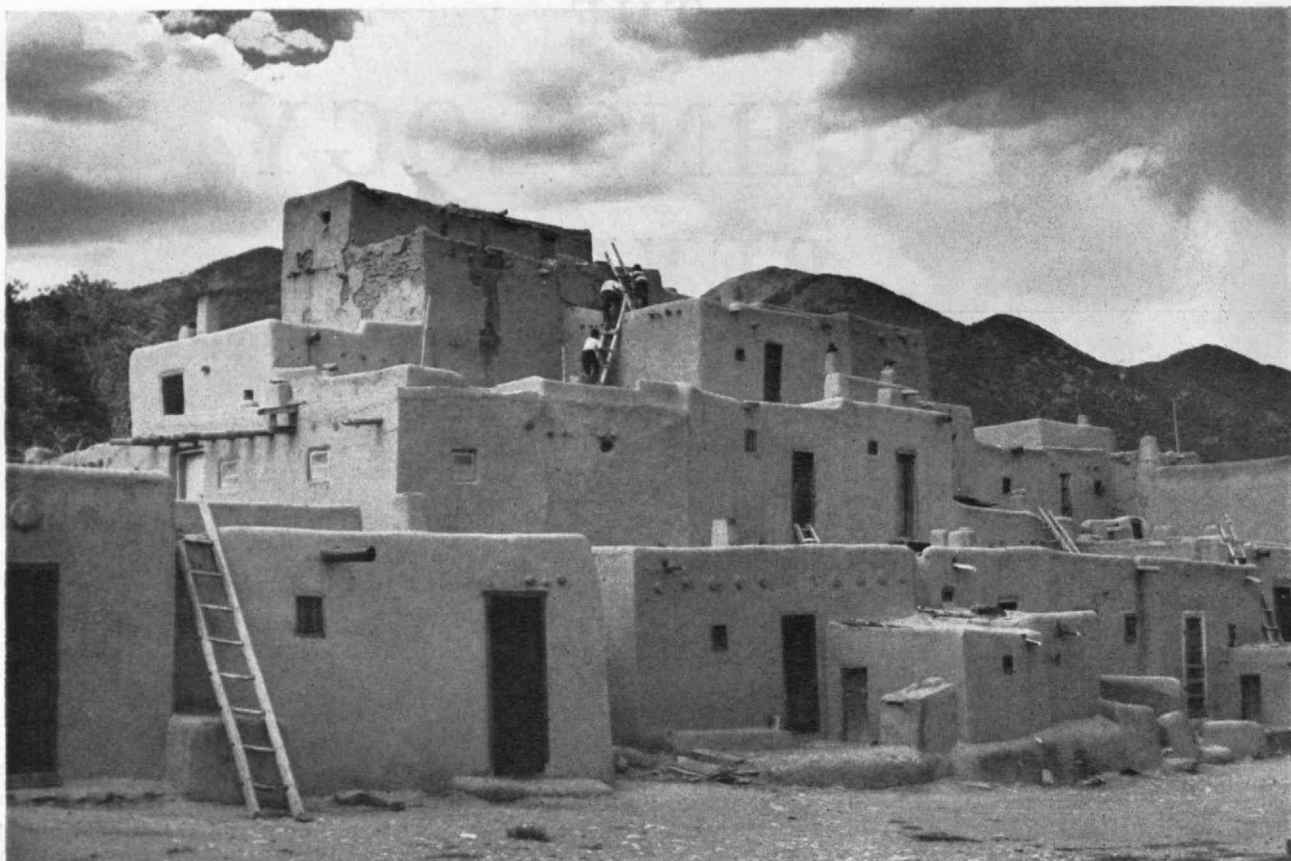
But such procedures are merely expedients, as the ultimate criterion of fatness is the amount of fat in the body. It is, however, manifest that direct determination of fat by chemical means cannot be done on living human beings. Fortunately, though, the composition of the human body can be closely estimated by measurements of total specific gravity, as the specific gravity of fat differs considerably from that of muscle,

bone, and other body tissues. Recently techniques have been perfected for accurately measuring the specific gravity of the human being, by determining body volume through displacement during total immersion under water. Although such immersion is not a pleasant ordeal, tolerable methods have been worked out. Also inaccuracies encountered in early use of this procedure, arising from air trapped in the lungs, respiratory passages and hair, and gas in the intestinal tract, have now been eliminated by learning how to compensate for such variables.

Recent studies of the composition of the human body by this method have confirmed some earlier observations made by cruder procedures, but have also added some new and surprising findings. For example, in a broad study of body composition of young and middle-aged men, an expected trend toward increasing fatness with increasing age was clearly shown. But it was further learned that some of the overweight younger men were actually less fat than some of the underweight older men. Apparently the decreasing physical activity that usually occurs in middle life leads to a shrinkage of some muscles through disuse. Such shrinkage would cause a loss in weight were it not offset by an accumulation of fat that usually occurs simultaneously. Hence, gross body weight ceases to be a measure of fatness in these situations.

These findings do not have immediate practical application against the obesity problem. Manifestly, it is not feasible to determine fatness routinely by ducking people; weighing, skin-fold measurements and related tests must continue to serve for regular use. But the new ability to determine the fat content of the living human body accurately, together with the information on age trends and other trends in obesity now being accumulated by use of this technique, are laying a foundation of basic data with clear ultimate application to the solving of America's number one public health problem — obesity.





Ward Allan Howe

*Typical of the housing found in the warm climate of the southwestern United States is this Indian adobe pueblo near Taos, N.M. Sometimes the buildings in these villages contain several stories and terraces, and agility in ascending and descending ladders would indeed be an important factor in home coming. These flat-topped houses could offer a challenge not only to a research project on climatic effects but on communal living as well.*

## Climate and Housing

A RESEARCH project whose purpose has been to provide for architects, engineers, and builders the means of applying to dwelling construction the accumulated knowledge about weather and its modification has been undertaken in the Institute's School of Architecture and Planning. Work under the project was divided into two parts: (1) that carried out under the direction of architects Victor and Aladar Olgyay and devoted to the development of graphical and tabular methods of presenting for the use of designers certain available climate data, and (2) that carried out under the direction of Thomas F. Malone, 2-46, Associate Professor of Meteorology, and devoted to the search for quantitative information for designers on the effects on the interior of a dwelling of measures taken to combat exterior climate conditions. The project was administered by the Albert Farwell Bemis Foundation, directed by Burnham Kelly, '41, Associate Professor of City Planning. The Housing and Home Finance Agency sponsored the climate and housing project.

First step of Victor and Aladar Olgyay was the formulation of a bioclimatic chart based on best available information regarding the effects of varying conditions of temperature and humidity on human comfort. Assuming complete reliability of this basic information, one may read from such a chart the limits

of comfort and the character of corrective measures which may be required. Using the New York-New Jersey area as an example, the Olgyays then devised graphical means of summarizing regional weather conditions: when checked against the bioclimatic chart, these graphs indicate the degree to which radiation, shading from direct solar radiation, and air movement are generally required in the region and the character of measures to be taken to provide them.

Third step was the development of a simplified method for the design of devices for shading any part of the walls of a building from the direct rays of the sun. Next, tabulations in form convenient for designers were made of solar radiation data in the New York-New Jersey area. Finally, generalized observations were made on a range of qualitative tools to be used in orienting buildings for maximum comfort, and in selecting building sites for community development in the area.

Professor Malone and Don G. Friedman, '51, a research assistant in the Department of Meteorology, undertook the quantitative evaluation of the effects of solar radiation within a dwelling, using heat flow analysis as an index. This involved the study of the climatic factor of cloudiness and the determination of the extent of diffuse radiation, which proved of greater importance in over-all heat gain than had been expected. Study of a conventional dwelling showed more heat entering through windows in the form of diffuse

than in the form of direct radiation during a typical summer day. Heat flow through the roof was also shown to be of great importance.

Additional research is required before dwelling designers can balance climatic parameters, building techniques, mechanical possibilities, and human possibilities, and human requirements without preconception. Nevertheless, the research already completed shows the way to ultimate objectivity in design whether in terms of time-honored combination of movable shutters and ivy or of entirely new architectural concepts.

### Low Temperature Sterilization

ALMOST since the discovery of radium itself, it has been known that destruction of microorganisms can be effected without production of heat, by emanations from radium or x-rays. Only recently, however, have extensive researches been conducted that point to the possibility of commercial utilization of the sterilizing properties of radioactive substances.

In 1950, the Atomic Energy Commission requested the Department of Food Technology at M.I.T. to ascertain the possibility of utilizing mock fission products\* as sources for ionizing radiations and to compare the sterilizing efficacy of these sources with that of radiations produced by conventional particle accelerators. During the past two years studies have been conducted at M.I.T. on the use of radioactive cobalt-60 as a sterilizing agent, under the direction of Professor Bernard E. Proctor, '23, Head of the Department of Food Technology, and Samuel A. Goldblith, '40, Assistant Professor of Food Technology. The work has been supported by the Atomic Energy Commission.

The first project undertaken at M.I.T. was the design and construction of a building suitable to house sufficient cobalt-60 to produce radiation of more than 1,000 curies. The amount of energy represented by such a quantity of cobalt-60 is equivalent to more than that of all the radium in the world as of 1945. The installation of such a powerful source of radiation on the M.I.T. campus brought with it many problems, because radioactive cobalt-60 is forever emitting powerful radiations which cannot be stopped.

In co-operation with the Radiological Safety Laboratory at M.I.T., the members of which also aided in outlining a safe operating procedure for the use of the source, a building was designed that was modest in cost and offered complete safety to all operating personnel, who could remain in the building for 24-hour periods day after day without injury to themselves. Actually the building was designed to offer complete protection at all times to operating personnel from sources of cobalt-60 radiation of from 5,000 to 10,000 curies.

During the past year research has been under way with different types of spoilage organisms commonly found in food and drug products, to study their relative radio-sensitivities to the gamma rays from the cobalt-60 source. The data obtained are being compared with data previously obtained on the effects of

\* The term "mock fission product" is applied to substances that, while not disintegration components of uranium fission, are produced in nuclear reactor piles.

cathode rays produced by particle accelerators. Naturally any series of comparative tests such as these is dependent, to a great extent, on the dosimetry of the various types of radiation. For this reason, great emphasis has been placed on a study leading to an accurate calibration of the kilocurie cobalt-60 source.

A new method of calibrating the source has been devised by Sol Davison, of the M.I.T. Division of Industrial Coöperation. This method uses a small calorimeter, which fits into the source and can be used for determination of the dose of radiations emitted by the isotope. The agreement between the results obtained by three different calibration techniques, one of which (the calorimeter) is physical and two of which (methylene blue and ferrous-ferri dosimeters) are chemical, has been good, which indicates that the chemical calibrations of dose made previously were correct.

With the satisfactory completion of the program of calibration, considerable study has been devoted to means of preventing such effects of radiation, as changes in flavor, color, and odor, all of which would be undesirable and deleterious to the materials being bombarded. Excellent results have been obtained on the basis of a novel idea, devised in the Food Technology Laboratories, of introducing so-called "free-radical acceptors" into the foods before irradiation.



M.I.T. Photo  
Ample safety precautions are taken in handling radioactive cobalt-60 in the research program of the Department of Food Technology. The vault in which the cobalt is stored consists of a blockhouse of concrete with walls and roof one foot thick and a lead-steel door containing one inch of lead capped by two half-inch layers of steel on each side. In this door is a smaller door, near the top, for introducing samples.



It is hoped that a larger source of cobalt-60 can be obtained in the coming year to permit the sterilization of greater quantities of food per unit of time and to permit higher dose rates so that studies can be made under conditions more nearly approximating those of commercial operation.

The results of the Institute's program of studying sterilization at low temperatures through the use of powerful sources of radiation have been encouraging. Although much work yet remains to be done before techniques now under study can be applied commercially there is every reason to believe, at present, that the sterilization of food products — especially those that are sensitive to high temperatures — may be effectively, quickly, and inexpensively carried out by utilizing waste products of nuclear reactors.

## ***Food in Civil Defense***

**F**OOD is a prime factor in civil defense, whether civilians be under siege or under aggressive attack, as in large scale bombings. Now the cold war has added a third kind of emergency in which food plays a key role, namely the blockade, as exemplified by the blockade of Berlin extending from June, 1948, to May, 1949. Accumulated experience in the feeding of civilians in all three of these emergency situations is now known through publication of reports given at an epochal conference on Food in Civil Defense, held at London, England, late in 1951.

Much of the knowledge in the British reports was gained during the London blitz of World War II, which gave rise to an unparalleled experience in the feeding of an immense urban population under continuous, intensive enemy attack. Should large scale hostilities break out in the future, it seems more than likely that combatants on both sides might well be faced with problems even more serious and extensive than those encountered in feeding large numbers of persons, either in London during World II, or in the attempted freeze out of Berlin during the cold war.

Immediate food needs of the blitz victims were supplied from canteen trucks. It was quickly learned that prompt serving of a hot, sweet drink to the stricken people was the most helpful initial measure. Then, within a few hours of the bombing, at the latest, a hearty, hot meal was given to the victims. Refreshment thus provided proved to be a crucial factor in re-establishing the morale of the victims, and in impelling them to take affairs into their own hands in attempts to solve some of their own dilemmas.

The next problem was to provide for households that were not directly hit by bombs, but whose food supply was cut off by the attack. Although London homes stockpiled certain foods for just such emergencies, two staples — bread and milk — could not be thus stored because of their perishable nature. Therefore supplies of these two staples were rushed to each bombed area as soon as the initial exigencies of the attack had been coped with. It is noteworthy that under such conditions the consumption of bread rose to twice the usual level. Bread, the staff of life, apparently becomes all the more a staple food in times of severe stress.

After the most urgent food problems of bombed populations had been relieved, the next step was to

salvage as much food as possible in local stores and warehouses that had been hit by bombs. The specific techniques and procedures, developed for such salvage, were so perfected that it was repeatedly possible to recover most of the foods in warehouses that had been hit directly and were totally demolished. Instruction of the people in safe use of the salvaged food was part and parcel of the recovery operations. For example, before eating salvaged foods packed in glass, consumers had to be taught to sterilize the contents by boiling. This precaution was needed because of the possibility that bacterial contamination might have lodged under the rim of the cap of the glass containers, as a result of the soiling involved in bombing and subsequent salvage, and the further possibility that this contamination might reach the contents when the container was opened.

Although atomic warfare was unknown in the European phases of World War II, radiological attack must now be reckoned with; hence a portion of the London conference was devoted to this subject. For example, safe limits of radioactivity of foods or beverages, exposed to an atomic blast, were announced. Food or drink that is consumed regularly over a period of 10 days may have beta-gamma activity up to 200,000 disintegrations per minute per cubic centimeter without harm to the consumer. On the other hand, if consumption continues for as long as 30 days, no more than 70,000 disintegrations per minute per cubic centimeter is safe.

Reports on the Berlin blockade of 1948–1949 showed that the main food problem then was to get a maximum of nourishment to the blockaded population with a minimum of weight, in order to reduce the demands on air transport. This aim was achieved the same way that a camper, carrying rations for an extended period, keeps down the weight of his pack; namely by transporting foods with minimal water content, and restoring, with locally available water, the moisture level necessary for palatability. Most foods, as eaten, are composed largely of water; potatoes have 80 per cent, fruits 90 per cent or more of water, and so forth. Therefore vegetables and fruits were flown to blockaded Berlin in dehydrated form. Powdered milk and eggs were similarly used. Dried meats were not used, because unpalatability militated against their acceptance, and because canned ready-to-eat meats effected a saving of cooking fuel that, like the food, had to be flown in. The dietary supplied to blockaded Berlin was rounded out with ingredients naturally low in moisture, such as sugar and fats which are wholly free of water, and dried beans, flour and cereals, all of which contain about 10 per cent moisture.

Bringing in flour by airplane also necessitated flying in fuel with which to bake it into bread. Baked bread or crackers would have weighed less than flour plus fuel; but ample freshly baked bread (again the staff of life) was found essential to civilian morale.

These are the high lights of the London Conference on Food in Civil Defense. All of us hope that this carefully recorded and skillfully analyzed experience need never be used, whether in attacks of a shooting war or under a cold-war blockade. Nevertheless it is reassuring to know that the knowledge is available should need arise.

# Following a Cold Trail

*To Discover Plant Relationships, Botanists Work over Old Clues  
and Uncover a Great Deal of Research by Many Workers*

By ERNEST C. CROCKER

THE new miracle weed killers live pretty well up to the claim made for them of killing weeds without killing the grass. Weeds, in this sense, are plants growing where not wanted. Killing usually is accomplished in a few days by overstimulation, using only a few milligrams of chemical per plant. A few kinds of weeds or plants having deep roots, such as clover, may lose only the tops and upper roots, allowing the deeper roots to re-establish the plants. What is there about grass that makes it immune to this selective labor-saving chemical that is not characteristic of most weeds? Actually, it appears that "2,4-D" (2,4 dichloro phenoxyacetic acid) and its even more active relative "2,4,5-T" (2,4,5 trichlorophenoxyacetic acid) stimulate grass violently, as they do other plants, but grass is able to hold its metabolic forces in sufficiently good balance to remain alive. Grass, with its narrow leaves, is superficially very easy to distinguish from most other plants. But is grass related to other plants in any way or is it a separate creation? Are all plants closely related?

The attempt to answer these questions has led to the uncovering of a great deal of research by many workers, which combined with natural history, geography, chemistry, and biology makes an interesting piece of scientific detective work. Let us review the subject without the handicap of the forbidding jargons of the specialists. It leads to an answer, much incidental information, and a wealth of entertaining speculation.

## **Botanical History**

All people are curious at times, but curiosity with some is all-important, driving them to be investigators. Ever since classical times, a few people have investigated plants and their relationships.<sup>68</sup> Theophrastus, a Greek philosopher of 2300 years ago, concentrated on plant description to such an extent that he became known as the "Father of Botany." He described only about 480 species, it is true, but did so with such minute detail that we have no difficulty today in telling which plants he meant. He would start with the roots and work up stem and branches through the leaves and flowers to the fruit. He concluded that the habit of growth was the most fundamental characteristic, and classified the plants as trees, shrubs, undershrubs, or herbs. He also observed the foliage throughout the year, noting whether the plants were evergreen or deciduous; and whether they were annuals, biennials, or perennials. Perhaps he had in

<sup>68</sup> Please see numbered references at end of article, page 230.



Rutherford Platt

Fig. 1. Canada lily, a typical flower, showing plainly the stamens and pistil of each blossom.

mind the specification of valuable medicinal plants, so that no mistakes need be made through careless identification, but more likely he worked on this project as a purely intellectual exercise.

Herbalists there always have been, in all lands. Through the centuries they collected much lore and a great deal of accurate description of plants. Linnaeus, writing in the 1730's, quoted upwards of 1,000 references in his great catalogue *Genera Plantarum*. At that time, some thousands of species of well-known plants had been described, although not on the basis of any logical system. Each grouping depended upon the worker's own thinking. There was continuing advancement, but sometimes a wrong theory led to regression for a time, until finally it was discarded. Some workers made accurate observations and analyzed their findings, while other equally accurate observers followed the method of Aristotle and reasoned, not always on accurate grounds, to arrive at their conclusions. Thus, the Italian, Cesalpino, reasoned that leaves were for the protection of buds, flowers and fruits. Actually, leaves are an important



plant organ — virtually lungs. He denied that there was sex in plants. Tournefort, a strong personality who dominated botanical thinking in the Seventeenth Century, followed Theophrastus in dividing the plant kingdom according to the habit of growth, as of trees, shrubs, and herbs, but he used the flower as an aid in grouping and describing the species. He worked only with the corolla of the flower, noting the number of petals and whether or not they were connected or separate. He disdained to consider stamens and pistils, thinking them mere decorative appendages, without real function.

About 1700, the Frenchman, Sébastien Vaillant, dared to attack the ideas of the great Tournefort, but was despised for his pains. Vaillant wrote a tract pointing out that stamens and pistils were really all that mattered in a flower, that these were the sex elements of the plant and had to be reckoned with. As a young man of 23, Linnaeus was much impressed by Vaillant's thesis, and seems to have accepted it in principle.<sup>9</sup> Later Linnaeus went on to develop a sexual system for the classification of plants, using only stamens and pistils for making the groupings. He specified some 24 classes, based first on the male element, the stamens, and second on the female, the pistils, as illustrated in Figure 1. Thus, his "Diandric Monogynia" class had two stamens and one pistil; "Pentandric Pentagynia" had five of each, and so on. This type of grouping placed many closely related species of plants together, but without directive indications as to which might have descended from which. The classification of Linnaeus was strictly an artificial census of plants based on sex elements alone. It was remarkably definite and easy to use, however, and furnished a desirable key to a vast group of plants. With it, Linnaeus astounded many of the scientists of the time with his grasp of world-wide plant relationship.

While the great naturalist Linnaeus sold the world on the existence of sex in plants and of its importance in classification, there gradually developed a desire to incorporate all that was known about plants, including sex, into a "Natural System." This term "natural" meant different things to different workers, according to what was natural to each of them, but the principle of using multiple determinants has proved to be entirely sound and practical. Some workers visualized separate creation for each species, whereas others had a picture of a continuing trend of evolution from many or few varieties or even from one original kind of plant. Evolution had been in the minds of certain thinkers from the time of the great Greek philosophers, but it became entrenched and accepted only after the publication of Darwin's great work in 1859. His book *On the Origin of Species by Means of Natural Selection, or, On the Preservation of Favored Races in the Struggle for Life* proposed a working mechanism to account for evolution, and the book had an astounding effect. Thereafter, nearly all plant classification systems, particularly of the flowering plants, included the thought of evolution, and arranged plants in the order of development as well as it could be determined. Thus, all monocots,<sup>†</sup> including grass, were found to fit together into one great phylum or sequence, and the dicots into another, of two parts: (1) the more primitive dicots with separate petals; and (2) the higher-developed dicots which had flowers with connected petals, often in tubular or irregular form. This arrangement was natural and apparently

<sup>†</sup> Monocots are plants which start with one cotyledon (first leaf or seed leaf), and dicots start with two. These seed leaves furnish nutrition to the plant until it establishes feeding through its own roots and green parts. A well-known dicot is the bean, whose two seed leaves are shaped like half beans. Monocots, such as corn, usually leave their one cotyledon in the ground with the plant rising above ground as a spear; dicots usually carry their first leaves up on the stem.

Chicago Natural History Museum



Fig. 2. *Welwitschia*, a strange "tree," which grows only in two deserts of southwest Africa. The ribbonlike leaves extrude continuously outwards and become worn away at the ends through lashings by the wind. Note the conelike fruiting bodies. Taproots, often 75 feet long, reach down to water.

accurate in general, but there still existed missing links that should connect the various phyla, to make the grand plan of evolution more evident. Particularly, the seed plants needed to be anchored to some earlier type of plant.

Botany today is a pragmatic science, turning to its use all kinds of evidence. It evaluates the form of the various plant parts (morphology), including wood fibers and pollen; chemical and physical evidences of relationship; paleobotany — the science that studies relics of plant development as shown by fossils, genetics; various experimental techniques; and geographical distribution. While there still remain missing links, the relationship of some formerly isolated groups, such as the cacti, casuarina, the proteaceae and other highly specialized plants have by now been resolved satisfactorily.

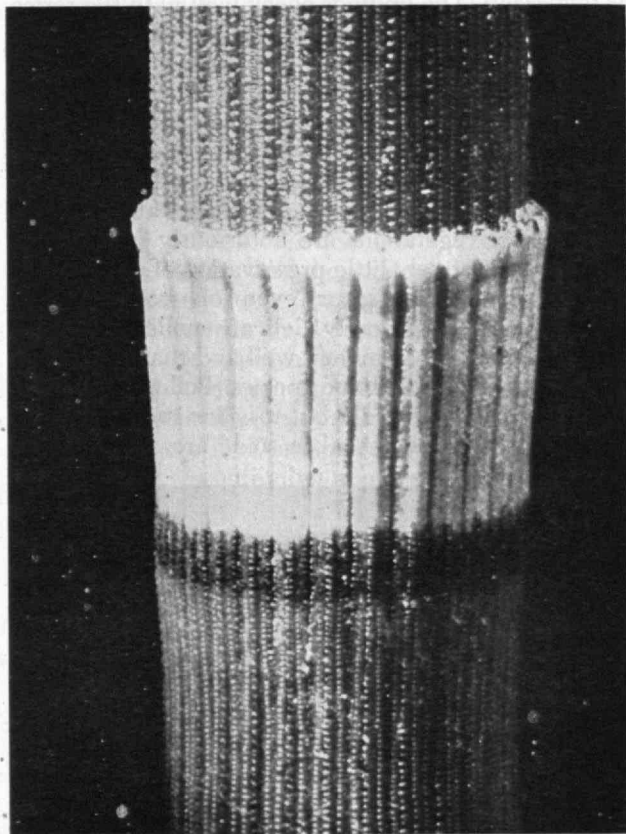
### Modern Investigations

There are numerous chemical substances that exist throughout, and indicate certain species or even larger groups of plants. Some of these substances can be shown by laboratory tests and some can be shown by their attraction of certain animals, in nature. Through odor, potato bugs find individual potato plants a mile from any other plants of the type; these insects will even settle on wild relatives of the potato family if no potato plants are to be found. The cabbage butterfly lays its eggs on various members of the mustard family, such as turnips, radishes, and the wild mustards, nearly all of which have strong pungent odors. It is occasionally fooled by the totally unrelated nasturtium, which even to us has a similar sharp odor.

Laboratory tests of the lignins of woody fibers differentiate between the woods of the seed plants and those of the gymnosperms, which include the conifers, ginkgoes, and the cycads. The Mäule test, which has been investigated intensively by the author, gives bright red colorations with the woody fibers of seed plants, tree or herb, whether these be monocots or dicots, and only pale brown with most other woody fibers.<sup>6,7</sup> A strange group of only three species, the Gnetaceae, (Gnetum, Welwitschia, and Ephedra) which have much in common with the conifers, gives bright red colors by this test. The ribbon-like leaves of Welwitschia may be seen in Figure 2. This anomalous group rates as considerably advanced over the conifers for it has vessels in the wood and other evidences of high development including broad leaves.<sup>2</sup> The placement of the Gnetaceae in the evolutionary scheme is still tentative, but on the basis of morphology, and the Mäule test, as well as serological reactions, they could be descendants of the Podocarpus group of the conifers. Conveniently, a certain species of Podocarpus (amara) gives positive Mäule tests, indicating a species within which the great evolutionary jump might have occurred. Chemical tests can undoubtedly be developed for finding bridges over other doubtful passages, but will call for much work. Thomas P. Hilditch has shown that the compositions of the fats of seeds tend to follow botanical patterns, although four fatty acids occur in nearly all fats. Alkaloids abound only in certain plant groups, sometimes extending over many species.

Mez and his co-workers surveyed all manner of plants by serological reactions and obtained a most impressive family tree of the vegetable kingdom.<sup>11</sup> In one sense, this was a chemical method of attack, for it depended on chemical variations in the proteins of the particular species. Assumptions are tacit that protein compositions change gradually and continuously as the plants evolve, that the same patterns of change did not occur in different branches of the plant kingdom, and that in any species once established there was no further chemical change with time. Serodiagnosis is a powerful tool and is well adapted for the survey of botanical progress on a big scale, especially at this late date. It makes great appeal to the imagination. In operation, a rabbit is sensitized to a particular plant protein injected into its blood. Drawn blood acquires the property of precipitating when treated in a test tube with solutions of proteins closely related to the one used for sensitization. There are degrees of precipitation and turbidity which can be used to show several stages of closeness of relationship between the plants furnishing the proteins. With such a device orphan groups of plants can be shown to have slight or strong connections with their next of kin. When Mez's remarkable family tree has been further verified by other workers, it should become established as an indicator of great value.

A rather specific physical test for relationships within the Euphorbiaceae has been developed using electrophoresis.<sup>12</sup> It shows the degree of positiveness



Rutherford Platt

Fig. 3. Magnification of stem of a living descendant of a coal-age plant, a "horsetail" (*Equisetum hyemale*). Note reflections of silica, a chemical constituent of this plant. There is so much silica in these stems that they often are used as scouring reeds.



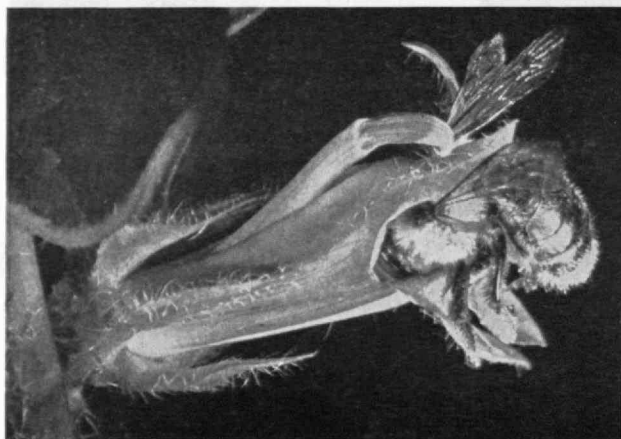


Chicago Natural History Museum

Fig. 4. Photograph of a diorama showing how coal-age vegetation might have looked. Trees of those times did not have bark, as we know it today.

of the charge on particles of the latex of each species of this group. The findings check well with the series of species which the morphologists have agreed upon.

Paleobotany is the study of plants of the past as shown by fossil remains.<sup>14</sup> If samples of a large part of the vegetable kingdom of the past had been preserved in the rocks, it would be necessary on'y to find the remains and read off the sequences. Actually, fossilization was only an occasional accident and the records of past vegetations are notoriously incomplete. There was relatively little preservation of herbaceous plants or their parts, or even of woody stems. Strangely, the apparently delicate pollen of many plants has kept its form very well and that frequently is all that remains of some species. Pollens are waxy and do not decay rapidly but fossilize to make up an important part of the coal in some areas. While an-



Rutherford Platt

Fig. 5. Bee, operating the cross-pollinating gears of a *Lobelia syphilitica* flower.

cient records are very spotty and hard to interpret, they tell us of the existence in the coal measures of plants which are extinct today, such as *Calamites*, *Sphenophyllum*, and *Sigillaria*, and of a few forms, including the horsetails and clubmosses, which have survived to this day in reduced or modified form, as may be seen in Figures 3 and 4. Coal plants existed some 300-400 million years ago, conifers and ferns of various kinds began to be conspicuous 200 million years ago, while the modern types of seed plants appeared "suddenly" about 100 million years ago, in the Cretaceous era, about the time that the first of the mammals appeared. This suddenness probably was more apparent than real.<sup>15</sup> The earliest specimens often show whole groups of trees including willows, oaks, plane trees, and poplars, not much different from those that exist today. There is particularly poor record of the evolution of flowers, but the probability is that insect and flower evolved together.<sup>4</sup> Figure 5 pictures a bee operating the cross-pollinating gears of a flower. The first bee-fertilized flowers, as well as the first bees, go back as much as 40 million years. Bees of that era are occasionally found well preserved in amber. Pollen findings show the kinds of plants growing in the long ago, both locally and generally, but only indirectly indicate plant relationship. Even though workers are few, lucky finds are still being made to help fill out and clarify the fossil record.

Darwin's concept of the mechanism of evolution — that plants vary enough to develop gradually into different species and maintain the new forms — is now known to be incomplete. Hugo De Vries, the Dutch botanist, showed that a plant may reproduce itself uniformly from generation to generation for a long

(Continued on page 226)



# Science Publicity

## —CHALLENGE AND DILEMMA

*As Scientific and Public Affairs Grow Closer,  
Our Citizens Need a New, Sounder, and Better  
Understanding of How Science Really Operates*

By JOHN I. MATTILL

ONE of the classic M.I.T. stories about science reporters is that of the girl who, after hearing a technical paper on new dielectrics for high-capacity condensers, asked the scientist for some more understandable concepts. She was told that the new material might resemble the ceramic used on bathtubs, and that, in its ultimate development, a large condenser might store enough energy to operate a motor car. The resulting news account, to the embarrassment of all concerned, suggested that bathtubs might replace the entire engine in the motor car of the future.

Science reporting today is, in general, far better than this example indicates. Indeed, newspapers, in the past 20 years, have made spectacular progress toward publishing interesting and informative reports of new scientific developments. The pioneers — among them, Watson Davis of Science Service, Waldemar Kaempffert of the *New York Times*, David Dietz of the Scripps-Howard papers, John J. O'Neill of the *New York Herald Tribune*, the late Howard W. Blakeslee of the Associated Press — have now been joined by many others who take pride in making information about science available and understandable to the nonscientist citizen. The National Association of Science Writers, originally fostered by the American Association for the Advancement of Science, now has nearly 100 active members, and science writing is recognized as a very specialized branch of journalism.

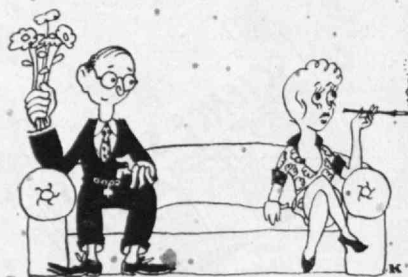
Science reaches its largest audience through the mass communication mediums — newspapers, popular magazines, radio, and television. In most of these mediums, information about science has the context of news. It competes for public attention with other news, such as the cold war, the weather, crime, and national politics. To meet this challenge, and so to

assure that their work is read, heard, or seen, science writers have developed a number of very effective techniques of popularization.

Scientists often look on some of the tactics of popularization with doubt, but the journalist's reply is that even though the scientist has, in fact, some justice on his side, the disadvantages of popularization must be accepted in the paramount interest of conveying science to its largest audience. And the journalist can point to some impressive results: certainly science writing during the years since the founding of Science Service (an event which, in many ways, marks the beginning of wide newspaper interest in science) has helped make the public conscious of science as a force in our daily lives. Writers can take much credit for the increasing public interest in, and support for, science on the basis of its contributions toward a higher standard of living for us all. Whatever follows is not intended to belittle these continuing achievements: it remains up to the scientists, working with these writers, to see that science continues to receive due notice in press and radio. But it is increasingly important that the aims and methods of science, as well as its accomplishments, be made understandable to the public.

During the years since World War II, science writers have been working in a new kind of environment, wherein the interrelation of national scientific and nonscientific affairs has become increasingly clear. What scientists can accomplish in the next five years is now, very obviously, dependent on decisions in the nonscientific realms of politics, law, and international relations. Conversely, international and domestic policies five years hence will depend, at least in some measure, on what scientists are able to do in the intervening years.





If these interrelationships are to be exploited constructively, scientists and the public need to get closer together and to understand

each other better. A revaluation of science's public relations is in order: perhaps the simple matter of "selling" scientific effort on the basis of its contributions to our health and comfort has passed its greatest usefulness. Does the information about science, which reaches nonscientists today, fill the larger need of a public whose decisions will help mold the future course of science? Are we helping to create what Edward C. Fuller of Champlain College calls "the needed middle class in science"?

The thesis of James B. Conant's interesting volume, *Science and Common Sense*, is that, in general, purely factual information about the results of scientific inquiries is inadequate to meet the public's need. He writes:

In my experience, a man who has been a successful investigator in any field of experimental science approaches a problem in pure or applied science, even in an area in which he is quite ignorant, with a special point of view . . . which is independent of a knowledge of the scientific facts or techniques in the new area to which he comes. Even a highly educated and intelligent citizen without research experience will almost always fail to grasp the essentials in a discussion which takes place among scientists concerned with a projected inquiry. This will be so not because of the layman's lack of scientific knowledge or his failure to comprehend the technical jargon of the scientist; it will be to a large degree because of his fundamental ignorance of what science can or cannot accomplish.<sup>1\*</sup>

In a sense, this is a dynamic view of science which adds an entirely new dimension to the factual information commonly possessed by even the most informed nonscientists today. It is probably what I. Bernard Cohen meant when he wrote: "Each of us has a new burden of citizenship not shared by previous generations: a new responsibility that calls for a secure understanding of the scope, nature, and effect of scientific enterprise."<sup>2</sup> All citizens, Dr. Cohen declares, have become "lay administrators of science," and hence all need to be acquainted with some of the principles of scientific development, the conditions under which discoveries are made, and how practical applications of these things come to pass; in short, the "tactics and strategy of science."

This, too, is what the Executive Committee of the American Association for the Advancement of Science must have had in mind during its meeting at Arden House in 1951, when it recommended that the Association "not only recognize but attack the broader external problem of the relation of science to society. . . . It is absolutely essential that science—the results of science, the nature and importance of basic research, the methods of science, the spirit of science

—be better understood by government officials, by businessmen, and indeed by all the people."

The science information in mass mediums today deals principally with *results*. By and large, scientists get in the news when they have found out something very specific, done something new (and preferably, very surprising), or built a shiny gadget which is different, larger, or more ingenious than previous machines. In most scientific work these chances come seldom; when they do come, such events are indeed worthy of suitable commemoration. But a highway is more than a row of milestones, and science is far more than a series of new gadgets which, perhaps, later make possible some conclusive results.

In itself, this suggests that most modern science writing for the large audiences does not get very close to picturing in full the tactics and strategy of science. Does it, in fact, depart so far as to result in actual misconceptions about scientists and their work?

Newsmen insist that their science material must have a "news peg," to make sure that what is written about science can compete with other news events and so to justify interest in it. In one sense, this is fair enough, since most scientific developments are indeed announced to the scientific world at professional meetings or in technical papers. The nonscientific world gets its news from writers who attend the same meetings, or read the same reports. But it is not easy for the layman to avoid the impression that results come in laboratories as dramatically and suddenly as they reach the public. Scientific discoveries are, in fact, not discoveries at all in a sense of sudden revelation; they are developments, gradually realized over months or years. If science gets its public support only on the basis of its dramatic discoveries, the spectrum of its activity will soon become warped and the result ineffective.

The way to make a report on science interesting to laymen, the journalist will tell you, is to make it seem practical for solving the layman's personal or business problem. This is a formula which works wonders: it is very easy to "sell" a report about a new kind of automobile engine, much harder to make a meaningful account about a new kind of condenser dielectric, and very difficult indeed to write about the abstract theory of conductivity. So the story goes out that the dielectric may make possible a bathtub to substitute for the engine in your motor car. But the scientist who studied the condenser dielectric had no more idea of putting it under an automobile hood than he had of sending it to Mars. Probably he was not at all concerned with the possibility of practical applications; that question simply had not entered his mind. In these pages there is no possibility of defining the various motives of various scientists. Suffice it to say that they are not those which popular accounts of scientific developments might often suggest to the nonscientist reader.



\* Please see numbered references at end of article, page 224.

Nor is it here possible to study the various criteria by which is measured the success of scientific projects. It is enough to say that practical application of the results is only one criterion of many, and one which applies only slightly, if at all, to most researches in colleges and universities, even in engineering fields. Since activities which have reasonably obvious applications are emphasized in mass mediums, even avid followers of science in these mediums know only a small segment of the total panorama of scientific activity.

The practical results achieved in laboratories during World War II have helped to make scientific enterprise a national concern. These successes came during a period when rigorous planning and organization were enforced upon science as upon many other elements of national life. Under that regime science—more accurately, engineering—produced an unparalleled array of brilliant new devices; to the layman who measures success in terms of practical results, World War II marked a sort of scientific renaissance. Taking little cognizance that it is the purpose of science to understand nature, whereas it is the aim of engineering to apply knowledge gained by science, the layman may well ask: "If science came into flower brilliantly then, why do scientists now seek so vigorously to escape from all forms of planning and organization?"

It is true that the practical results, which make most appeal in the layman's reading about science, are often subject to planning, as they were during World War II. It is not so easy to make a case, in mass mediums, for the equally vital unplanned exploration of new horizons. For there can be no master minds to plan this kind of fundamental science in advance; no one can predict where new directions will lead.

The potential of the lay administrator of science is nowhere clearer than in the matter of so-called basic research, that is, studies stimulated simply by curiosity, with no immediate practical ends in view. Since World War II, scientists have been struggling first for creation, and now for adequate support, of a National Science Foundation dedicated principally to the encouragement of basic research and scientific education. The fight has not been easy, and is not yet won. The arguments before the Appropriations Committees of Congress have served to demonstrate how little is known about the role of basic research in the larger pattern of scientific development. At the 1952 hearings before the House Appropriations Committee, Representative John Phillips of California finally concluded that basic research was "a sort of a type of fishing expedition." On an earlier occasion, funds were denied when the House Committee concluded that the United States cannot afford the luxury of "unproductive" fundamental research at a time when practical needs are so emphasized by the international situation.

To a science writer, the baffling thing about basic science is that it defies most of the attention-getting methods which he is accustomed to using. Nor is the fact that basic science is the necessary foundation for applied science easy to prove in simple terms. Choose any specific example and the relationship is

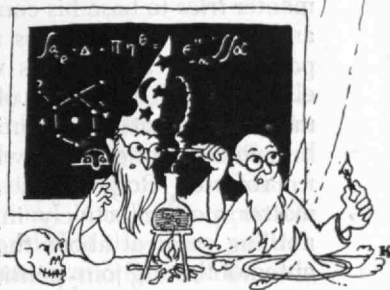
likely to be remote — so remote that it seems to a nonscientist reader like trying for the fifth card of a royal flush. The application of any basic study, if indeed one turns up, is thoroughly unpredictable; and this confuses the popular conception that science is most methodic and orderly in its progress. To a science writer the puzzle is simply how to convey, to nonscientists, the true role of what is called basic research in the larger pattern of scientific affairs. To a large extent it remains unsolved.

It is easy for a popular writer to picture a bearded scientist at work over his smoking test tubes and retorts, a model rocket screaming with an ear-splitting wail, or a blackboard full of the most complex calculations about an imaginary point in an imaginary vacuum. This kind of picturesque language helps make things readable; complexity made understandable flatters the reader. Hence the temptation for a writer to make scientific subjects vastly more complicated and inaccessible than they are in fact. Instead of attracting a real understanding of science, there is at least the possibility that this kind of approach may scare an audience away from even superficial information. After a survey made with the help of the firm of Hill and Knowlton, the Manufacturing Chemists' Association has been told that there are "overtones of black magic in the public's impression of the chemical industry," and Hill and Knowlton add that "what people do not understand they are inclined to fear."

Professor Eric M. Rogers of Princeton University is among many who have warned of the tendency to "glorify the 'wonders of science,' paint the romance in glowing colors, and make the scientist seem a wizard who dispenses knowledge and explanations."<sup>8</sup> The recent *Saturday Evening Post*

(October 20, 1951) account of M.I.T. states: "Buck Rogers Would Love It Here: Ordinary mortals are uncomfortable at Massachusetts Institute of Technology." A career in science may be demanding of some special talents, but these are not uncommon ones, and not all successful scientists are supermen, geniuses, or absent-minded professors. If the decline of students entering science in high schools and colleges is to be reversed, this Buck Rogers theory needs a vigorous attack. Scientists are citizens and humans, just like everybody else.

The effort toward picturesque language may raise another difficulty to a real understanding of scientific enterprise. It is easy to attract attention by saying that your desk is not really made of what you see. Rather it is composed of molecules floating about in space, and the molecules in turn are made up of atoms whose electrons, neutrons, and protons are also rushing about in their own private universes. The lay reader, sitting on a solid chair at his hard desktop, may find this intriguing but a little hard to take. In their place the concepts of molecules and atoms are most useful, but the scientist would find





the application of elementary particles to office furniture no more satisfying than the layman does. Misapplication of concepts of science actually confuses the role, and so minimizes the value of this kind of conceptual scheme.

If you ask an intelligent nonscientist how to account for the progress and success of scientific enterprise during the last 50 years, he would probably start talking about scientific method. The question is still open to argument, but many of his colleagues are now coming to agree with the view of Percy W. Bridgman, physicist and philosopher at Harvard University, that there is no such thing as the scientific method, but that the progress of science results simply from doing "one's damndest with one's mind, no holds barred." Or, as Dr. Conant expresses it from a historian's point of view: "The stumbling way in which even the best of the scientists in every generation have had to fight through thickets of erroneous observations, misleading generalizations, inadequate formulations, and unconscious prejudice is . . . largely neglected by those expounders of the alleged scientific method who are fascinated by the logical rather than the psychological aspects of experimental investigations."<sup>4</sup> Professor Rogers asks: "Are scientists themselves better for their studies [with scientific method]: tidy and systematic in their general life, critical and unbiased in their general thinking?"

All this does not mean to deny that a good experimenter *tries* to base his conclusions on observed facts and to make his theories fit those conclusions. The point is that a scientist's work, like that of anyone else, depends on factors of personality and environment, and that all scientific research involves the human element of those who do it.

Professor Rogers' question probably puts the matter most effectively in laymen's terms: there is nothing magical about the way scientists buy their automobiles or join political parties; they seem to revert to their own allegedly superior kind of common sense only in their laboratories. The man in the street must find little sense in this. How many nonscientists have been discouraged, by such lines of thought, from a real understanding of how science works, or have been led to the confusions recorded by Anthony Standen in *Science Is A Sacred Cow*?<sup>5</sup>

If science can be removed from the concept of an absolute scientific method, it may suddenly become a vastly more common and understandable human activity. Leonard K. Nash of Harvard emphasizes the problem: "It is important to dispel the notion that the operations and conclusions of science have perfect certainty, that science is a miracle worker to which all things are possible. . . . Indeed, it needs to be seen as one of many human enterprises, subject to all the risks and chances that make life at once exciting and terrible, and having much in common with any other undertaking

to which we bring our hopes and fears, our humility and our ambitions."<sup>6</sup>

The loyalty, security, and secrecy restrictions under which many scientists now labor combine to form a most serious challenge to modern science—perhaps the most serious of those challenges whose solutions must lie in the immediate political environment. Restrictions on the freedom of scientists have assumed large proportions since World War II: many scientific developments of all types and from all sources now rate the secret stamp, and scientists may be screened for loyalty before they can go to work, or even to school. Physics especially has been the victim to such an extent that Dr. Conant, speaking at Columbia University early in 1952, declared: "The general public might just as well stop reading anything in the papers about atomic energy or atomic bombs. By the nature of the case it is almost certain to be misleading. . . . Those who are competent to discuss such matters cannot do so. . . . The world being what it is today and is likely to be for a long time to come, secrecy and applied nuclear physics are words that must be joined together. But it is of the utmost importance that the general public understand the consequences of this union."

It is not easy to dramatize, for a nonscientist, the dependence of scientific progress on freedom of scientists to exchange ideas. In his first annual report as Director of the National Science Foundation, Alan T. Waterman put the matter this way: "Scientific progress is cumulative. One individual builds on the findings of other individuals or groups; his work in turn becomes modified and augmented by still others. The faster and more fully information passes from scientist to scientist, the faster science progresses. When intellectual exchange is hampered, science as a whole declines. Ready exchange of information can be called the circulatory system of a healthy and vigorous scientific body."

This is not to say that all restrictions on scientific information can or should be removed today. But those who are responsible for the decisions restricting scientists (ultimately the new lay administrators of science) need to know that there are at least two sides to the issue. As Walter Gellhorn remarks in his excellent volume on *Security, Loyalty, and Science*: "It is arguable that the United States is purchasing security at the price of progress. A secrecy program is marked mainly by apprehensive and backward glances over one's shoulder, and this may . . . retard the forward drive of scientific energies into as yet unexplored areas."<sup>7</sup> There is also plenty of

evidence to suggest, as Dr. Gellhorn says: "The impossibility of permanently 'keeping a scientific secret' or of precluding others from independently duplicating the most closely guarded researches."<sup>8</sup>

(Continued on p. 220)



At the right is primitive equipment for washing alluvial gold ores as illustrated in a translation of Ercker's Treatise on Ores and Assaying. At A, the washer is working the screen, and below him, at D, is an attendant at the blanket sluice. The worker who carts the ore onto the upper platform and empties it through a hole onto the screen is shown at E.

# Gold

## IN FACT, FICTION, AND FINANCE

By CARLE R. HAYWARD

*"And the Lord God planted a garden eastward in Eden; and there he put the man whom he had formed . . . And a river went out of Eden to water the garden; and from thence it was parted, and became into four heads. The name of the first is Pison [Pishon]: that is it which compasseth the whole land of Havilah, where there is gold; and the gold of that land is good . . ."*<sup>1</sup>

It is evident from the above quotation that the writer of Genesis was not only familiar with gold but recognized that natural gold varied in quality. He also implies, probably correctly, that it was available for use at the very beginning of the era of Homo sapiens. Certainly man developed methods for refining gold at a very early date. The book of Job [Revised Standard Version, 1952] states: "Surely there is a mine for silver, and a place for gold which they refine."<sup>2</sup>

Archeologists and metallurgists agree that gold was probably the first of the metals to be put to human use, for the two outstanding properties of gold are its resistance to corrosion and its malleability. The first was the cause of its early discovery, and the two together have directed its use throughout the ages.

Primitive races have always had an eye for anything which is bright and shining, and attendance at any modern social function gives abundant evidence that civilization does not eradicate this characteristic. Even fish, animals, and birds are attracted by anything which glitters, and it is easy to visualize the ancestors

<sup>1</sup> Genesis 2:8, 10-12.

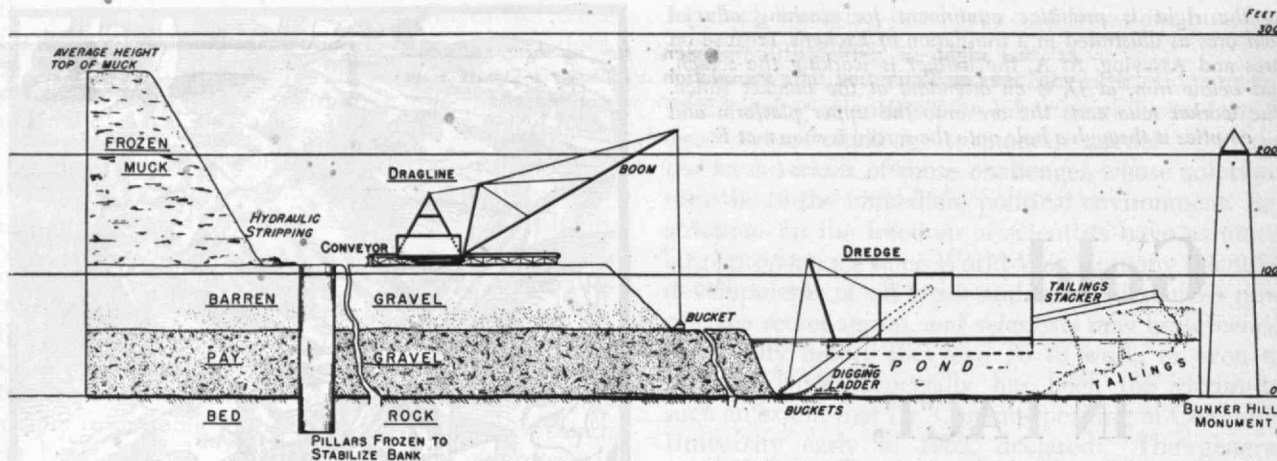
<sup>2</sup> Job 28:1.



of modern men being intrigued by the shiny particles they found amid the sands of certain stream beds. The name "gold," which varies only slightly in different languages, was probably derived from the Sanskrit verb "jval" meaning "to shine." It is highly probable that prehistoric man believed that this shiny and unusual material was of supernatural origin and its early use for religious purposes may have been due to this fact. At some later period it was found that this strange yellow substance could be easily flattened out by pounding and could even be coalesced by such treatment. Its extreme malleability made it possible to utilize gold for ornamental purposes much more extensively than would otherwise have been possible.

Archeologists have discovered gold articles of the most exquisite workmanship whose origins have been placed at earlier than 3000 B.C. and some possibly as early as 4000 B.C. These articles were in part for personal adornment, some for religious purposes and some for other uses. In many cases the discoveries have been made in royal tombs, and although modern archeologists treat such discoveries with respect and preserve them carefully, it is unfortunately true that robbers through all ages have enriched themselves by plundering royal tombs and doubtless melting priceless relics into bullion. The discovery of the tomb of King Tut-Ankh-Amen in Egypt in 1922 caused a sensation at the time and will be remembered by many readers of this article. Here was a king of minor importance whose burial place had, by chance, been untouched. His coffin was covered with about 600 pounds of gold and various beautiful gold objects





U.S. Smelting Refining and Mining Company

As shown in this diagram of gold recovery operations at Fairbanks, Alaska, in winter a line of pillars is artificially frozen in the wet gravel to prevent caving during excavation in the summer. The pillars are spaced 40 feet on centers, and each is about 28 feet in diameter and 140 feet deep. The barren surface gravel is removed by dragline and discarded. The auriferous gravel is removed by a floating dredge carrying equipment for catching the gold.

were nearby. If all this splendor were buried with a minor king, what must have been originally in the tombs of the really great pharaohs of that period — tombs long since rifled of their contents by unknown marauders?

A quotation from Exodus indicates that, at the time of Moses, gold was used both in the cast and beaten form and the casual way in which the directions are given indicates that there was nothing unusual in the operation. "And Bezaleel [Bezalel] made the ark of shittim wood . . . And he overlaid it with pure gold within and without, and made a crown [molding] of gold to it round about. And he cast for it four rings of gold . . . even two rings upon the one side of it, and two rings upon the other side of it. And he made staves of shittim wood, and overlaid them with gold. And he put the staves into the rings by the sides of the ark, to bear the ark."<sup>3</sup>

The golden calf made by Aaron was produced by melting the jewelry of the Israelites and casting it into an idol for worship.

We are not sure why ancient kings and emperors were buried with their riches. We do know, however, that when their tombs were robbed there was probably little loss of life, whereas the treasure may have originally been in large part collected by means of bloody wars in which entire populations were killed or enslaved.

The gold taken from the earth since the beginning, being nearly indestructible, has gone through a suc-

<sup>3</sup> Exodus 37:1-5.

At one of the U. S. Smelting and Refining Company properties in Alaska, barren surface material is removed with high-pressure water jets, or hydraulic giants.

cession of dramatic cycles. It has been collected and hoarded, fabricated in various ways, and used for many purposes. Its possession has however been an invitation to plunder and murder, and history is full of tragic events which have been brought about by efforts to seize it. A terrible price in blood and suffering and much wealth was surely paid for every ounce of gold accumulated by mankind up to the last half of the Nineteenth Century. In spite of this fact, gold has held its lure throughout all history and probably far back in prehistoric time.

Any reader of the Old Testament stories can note case after case in which robbery and tribute were the real purpose of war, and all history is filled with similar accounts.

There is a story in the Old Testament which illustrates how the predatory nations operated some 2,500 years ago and perhaps in very recent times. King Hezekiah of Judah had been seriously ill and the king of Babylon had sent messengers with a present and a letter of sympathy. "And Hezekiah was glad of them, and shewed them the house of his precious things . . . there was nothing in his house nor in all his dominion that Hezekiah shewed them not. Then came Isaiah the prophet unto king Hezekiah, and said unto him, What said these men? and from whence came they unto thee? And Hezekiah said, They are come from a far country unto me, even from Babylon. Then said he, What have they seen in thine house? And Hezekiah answered . . . there is nothing among my treasures that I have not shewed them. Then said Isaiah . . . Behold, the days come, that all that is in thy house, and that which thy fathers have laid up in store until this day, shall be carried to Babylon: nothing shall be left . . ."<sup>4</sup>

The Punic Wars were primarily a struggle for the gold of Spain. Caesar's invasion of Gaul was carried on to secure gold. The Spanish conquests of Mexico and Peru were for gold and silver, and innumerable other instances might be cited. We have detailed accounts of the methods used by Cortez and Pizarro and their needless slaughter and enslavement of the

<sup>4</sup> Isaiah 39:2-6.



Black Hills Studios, Inc.

people of Mexico and Peru, and it is probable that some of the more ancient invasions of numerous other countries were just as barbarous.

Pliny who was well informed on the history of his time, and perhaps was not so easily shocked by bloodshed and cruelty as we might be today, is quoted as follows: "Oh! that the use of gold were clean gone! Would it could be quite abolished among men setting them, as it doth, into such cursed and excessive thirst after it."

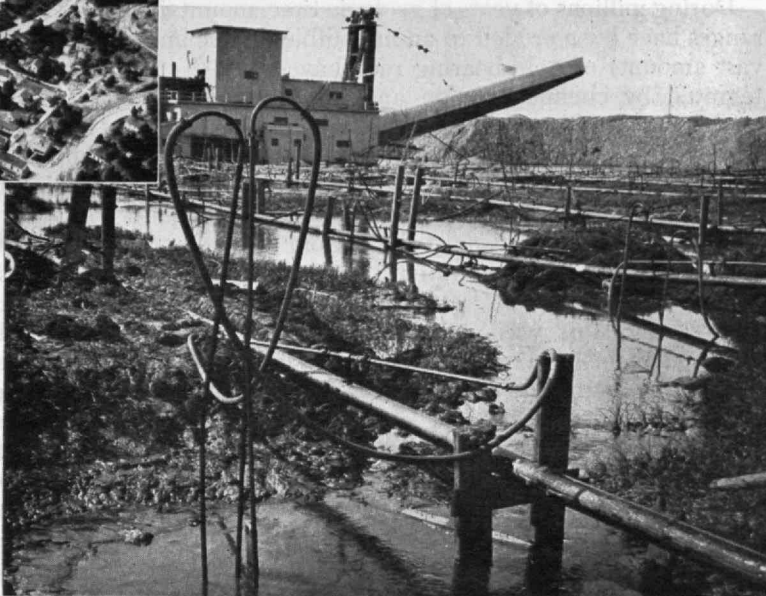
### Goldbeating

The general attitude toward gold in the Middle Ages is shown in a *Treatise on Ores and Assaying*<sup>5</sup> written by Lazarus Ercker in 1580, translated by Anneliese G. Sisco and Cyril S. Smith, '26. "Gold is considered to be the very best, the most exalted, the most important, the most beautiful and the most noble of metals, just as the sun is the brightest, the most beautiful, and the most splendid light among the planets and stars. Just as the sun by its innate celestial power and heat quickens and wakens and stirs into life all things on earth — so is gold the most effective and the most curative of metals, a true cordial and preservative in case of all kinds of poisonous and dangerous maladies, a metal which never loses its splendor, radiance and brilliance in either fire or water or soil and which cannot be destroyed or ravaged by any impurity; which withstands assaying, cementation, hammering, punching and rubbing and is not lessened thereby."

This account serves to remind us that the art of gold-beating, whose origins are lost in antiquity, has changed little over a period of several centuries. Gold leaf is about 1/300,000 of an inch thick. Although procedures for producing it vary in detail, the operations are somewhat as given in the following outline which is abstracted from the 14th edition, *Encyclopaedia Britannica*.

<sup>5</sup> Chicago: University of Chicago Press, 1951.

Left: Aerial view of the largest gold operation in the United States — Homestake Mining Company in Lead, S.D. Below: Gold dredge and thawing equipment at one of the U.S. Smelting Refining and Mining Company properties in Alaska. Sometimes in Alaska the auriferous gravels are perpetually frozen down to bedrock and require thawing. After a large area has been thawed, which may take several seasons, the gravel is excavated by a floating dredge and passed over screens and riffles to recover the particles of gold. Occasionally, bodies of ancient mammoths, well-preserved, have been found in the frozen ground.



1. Melt the gold, alloy it to the desired amount, cast it in bars and roll it into a ribbon such that a piece 10 feet long and 1½ inches wide will weigh an ounce.

2. Anneal the rolled product to make it soft and ductile and cut into short lengths.

3. Place pieces between the leaves of a "cutch" which is about ½ inch thick and 3½ inches square containing 180 leaves of tough paper, vellum preferred. Beat for 20 minutes with a 17-pound hammer.

4. Remove the sheets of gold, cut each into four pieces and put between the skins of a "shoder" which is about 4½ inches square and contains 720 second-grade skins. Beat two hours with a nine-pound hammer.

5. Remove the sheets of gold, cut each into four pieces and place between the leaves of a "mould" consisting of 950 of the finest goldbeaters' skins 5 inches square. Beat four hours with a seven-pound hammer.

An ounce of gold will produce 1,200 leaves which will trim to squares 3½ inches on a side. Thus one ounce will produce about 150 square feet of gold leaf. The goldbeaters' skin consists of the outer coat of the caecum or blind gut of an ox. A skin lasts for about 200 beatings.

### Recovery of Gold

It is not the purpose of this paper to discuss the technical details of the recovery of gold from the earth or its subsequent treatment, but a few facts may be of interest.



Among the metals, gold alone is found predominantly in the native or uncombined state. Copper is occasionally found in the metallic state but with the notable exception of the Michigan deposits its occurrence in that form is in relatively small amounts and at widely separated locations. Bismuth, mercury, and silver are found at widely separated spots in the metallic state; and a few small meteorites consist of iron-nickel alloy. Although gold is one of the rare metals, it is found in all parts of the world and nearly always as metal, although sometimes alloyed with small amounts of silver and copper.

During millions of years of geologic time, mountain ranges have been eroded to an incredible degree and vast amounts of gold-bearing rock have been disintegrated by chemical action and abrasion in both modern and prehistoric streams. During this action the gold, being soft rather than brittle, was freed from the associated rock in particles of varying size and shape and because of its high specific gravity it tended to lodge in stream beds or at the bottom of sand and rocky debris washed down from the mountains, often many miles away. The first gold found by our prehistoric ancestors was undoubtedly in the beds of flowing streams, and modern man is still industriously working over the gravel deposited by both ancient and existing streams.

The original deposits of gold in the earth's crust are in veins running through quartz or other rock or in deposits of sulfide minerals of copper, lead, and zinc. In all these cases, as previously stated, the gold is usually in the metallic state either as long stringers, lumps, or fine powder. The only mineral compound is the telluride which is of minor importance measured against the total supply, but is locally important in some mining districts.

It is impossible to tell when man began to secure gold by rock mining but it probably did not occur in

the true sense until after iron tools became available. Outcroppings of gold veins may have been worked to slight depth by heating the rock with fire and quenching suddenly with water. This is known to be one of the earliest methods for disintegrating rocks.

Early mining methods were crude and the operations dangerous due to lack of safety devices and good engineering methods. The excavations were narrow and crooked, and poorly ventilated. The miners were nearly all slaves and because of the danger and hardships, the slaves were often assigned to the mines as a means of punishment.

The rock removed from the ground was broken by heating and quenching, or by crude hand methods until the gold was freed. Over the centuries procedures for mining and crushing improved but it was not until slave labor became scarce that any rapid improvement was made in these directions.

Man has always learned how to do things by observing nature or other human beings and trying to imitate the operations. Primitive man observed how particles of gold lodged in crevices or low spots in a stream bed. He imitated nature by shaking a batch of gold-bearing sand in water until the gold settled to the bottom, and then slowly and carefully washed away the barren top sand until the gold (with possibly some heavy minerals) remained. Hundred of modifications and improvements of this procedure have been developed and used from time to time, but the same principle is used in the most modern equipment.

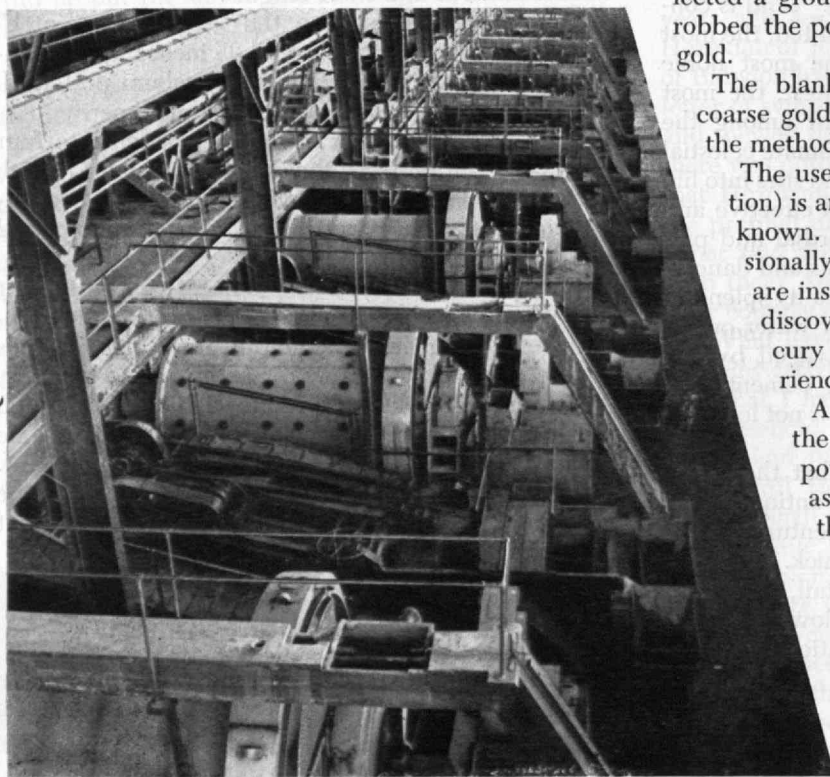
The legend of Jason and the Argonauts, dated about 1263 B.C., can be told in modern terms as follows. It was learned that the Armenians were recovering gold by washing sand and gravel through inclined sluiceways in the bottom of which were placed sheepskins with the wool side up. The gold was caught in the wool and periodically the skins (golden fleece) were removed and the gold washed out. Jason collected a group of buccaneers, went to Armenia and robbed the poor miners of their arduously recovered gold.

The blanket tables used today for recovering coarse gold from crushed ore are but a step from the method used in Jason's time.

The use of mercury to absorb gold (amalgamation) is ancient, although the date of origin is not known. Mercury is one of the few metals occasionally found in the metallic state, and there are instances of a natural gold amalgam being discovered. It is possible that the use of mercury as a collector of gold sprang from experience with this alloy.

A new era in gold production came with the commercial use of a weak solution of potassium cyanide (later sodium cyanide) as a solvent for gold and its application to the extensive gold deposits in the Trans-

*(Continued on page 216)*



*These grinding mills at the Homestake Mining Company in Lead, S.D., grind the ore from the mine preparatory to leaching out the gold with cyanide solutions.*

# THE INSTITUTE GAZETTE

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## Electronics Heads

THE appointment of two associate directors for the Research Laboratory of Electronics at M.I.T. has been announced by Julius A. Stratton, '23, Provost. They are George G. Harvey, Associate Professor of Physics and formerly Assistant Director of the Research Laboratory of Electronics, and Henry J. Zimmermann, '42, Associate Professor of Electrical Engineering and staff member of that laboratory. Both will continue their long association with Professor Jerome B. Wiesner whose appointment as director of the Research Laboratory of Electronics was announced last summer.

Dr. Harvey is well known for his studies on x-ray scattering and atomic structure and for his research in electron microscopy. He is the author of a number of scientific articles which have appeared in the *Physical Review* and the *Journal of Chemical Physics*.

Born in St. Louis, Mo., in 1908, Dr. Harvey was educated at Washington University, where he was awarded the degrees of bachelor of arts in 1928, master of science in 1930, and doctor of philosophy in 1932. From 1932 to 1934 he was a National Research Council Fellow in physics at the University of Chicago, and was appointed instructor in physics at M.I.T. in 1934. From 1937 to 1938, he was an instructor in physics at the College of the City of New York. Dr. Harvey returned to M.I.T. in 1938 as assistant professor, became an associate professor of physics in 1943, and in 1950, the executive officer of the Department of Physics.

During World War II, Dr. Harvey served for four years as a staff member of the Radiation Laboratory at M.I.T. In 1944 and 1945 he was a scientific consultant for General Headquarters (Southwest Pacific Area) and the Research Section of the United States Armed Forces (Far East) under the Office of Field Service of the Office of Scientific Research and Development which was created in 1941.

Dr. Harvey is a Fellow of the American Association for the Advancement of Science and of the American Physical Society, as well as of the Physical Society of London. He is a member of Phi Beta Kappa and Sigma Xi fraternities.

Professor Zimmermann has been a member of the Institute's teaching staff since 1940 when he was appointed a research assistant in the Department of Electrical Engineering. He was named instructor at M.I.T. in 1942, assistant professor in 1946, and associate professor in 1948. Since 1947 he has been on the staff of the Research Laboratory of Electronics where he has served as supervisor of a research team.

Born in St. Louis in 1916, Professor Zimmermann received the degree of bachelor of science from Washington University in 1938, and the degree of master of science in electrical engineering from M.I.T. in 1942.

From 1938 to 1940 he served at Washington University as an instructor in electrical engineering. During this period, Professor Zimmermann carried out research on sensory aids for the Central Institute for the Deaf, and developed an electronic device to present a visual indication of pitch for use in teaching voice inflection to the deaf.

During World War II, Professor Zimmermann helped to organize radar training courses at M.I.T., for Army and Navy officers. These courses led to the establishment of the M.I.T. Radar School, where from 1941 to 1946 Professor Zimmermann served successively as instructor, supervisor of Army courses, and assistant director of the school. He is a member of Tau Beta Pi and Sigma Xi, the Institute of Radio Engineers, as well as the American Institute of Electrical Engineers.

## Westward, across the Atlantic

TWO distinguished British educators have been appointed to visiting posts on the Institute's Faculty. Ewart R. H. Jones has been named Arthur D. Little Visiting Professor of Chemistry, and John Jewkes, Professor of Economic Organization at Oxford University, has been appointed Visiting Lecturer in Economics at M.I.T.

Professor Jones was educated at Grove Park School, Wrexham, and at the University College of North Wales. He received the degree of doctor of philosophy from the University of Wales in 1936, and the degree of doctor of science from the University of Manchester in 1944. While at M.I.T. he will be on leave from the University of Manchester, where he is Sir Samuel Hall Professor of Chemistry.

Professor Jones's published work embraces a number of fields including steroids, vitamin A, triterpenes, acetylenes, and plant-growth hormones. In 1940 he received the Meldola Medal, a distinguished award presented annually by the Royal Institute of Chemistry to the young chemist who has made the most meritorious contribution to chemistry. He was named a Fellow of the Royal Institute of Chemistry in 1944, and a Fellow of the Royal Society in 1950.

The professorship which Dr. Jones holds at M.I.T. has been established out of a bequest of funds left to the Institute by the late Arthur D. Little. Dr. Little, a graduate of M.I.T. in 1885, was widely known for his outstanding pioneering in the application of science to industry.

Professor Jewkes comes to the Institute under the joint sponsorship of the School of Industrial Management and the Department of Economics and Social Science. He was at M.I.T. for a month, beginning November 24, and during this period conducted a number of seminars with students, as well as consulting with members of the Faculty.





M.I.T. Photo

The wear of a decade and a half of continued use last year necessitated replacement of the fleet of dinghies which, since 1936, has enabled M.I.T. to take a leading part in intercollegiate sailing. A portion of the new fleet is shown at the M.I.T. Sailing Pavilion. The new boats, designed by Professor Emeritus George Owen, '94, are built of Fiberglass. They sail well, are well liked, and in the opinion of Walter C. Wood, '17, Sailing Master, should be easier and less expensive to maintain than the original wooden boats.

Professor Jewkes has held his post as professor of economic organization at Oxford since 1948, and is a Fellow of Merton College. He was educated at the Barrow Grammar School and at Manchester College, where he served as a lecturer in economics from 1926 to 1929. During the following year he held a Rockefeller Foundation Fellowship. From 1936 to 1946 he was professor of economics at Manchester University, and for the following two years he held the Stanley Jevons Professorship of Political Economy. In 1941 he was director of the Economic Section of the War Cabinet Secretariat, and in 1943 he was appointed director-general of statistics and programmes in the Ministry of Aircraft Production. He was made principal assistant secretary, Office of Minister of Reconstruction, in 1944, and became a member of the Fuel Advisory Committee the following year. In 1946 he was an independent member of the Cotton Industry Working Party, and served as a member of the Royal Commission on Gambling, Betting and Lotteries in 1949.

### Midwinter Meeting

ROYAL BARRY WILLS, '18, chairman of the Midwinter Meeting Committee, reports that plans for the annual event in Walker Memorial on Thursday, February 5, 1953, have been completed. Karl T. Compton, chairman of the M.I.T. Corporation, and Professors Harold E. Edgerton, '27, and Edward R. Schwarz, '21, will take part in the program at which George R. Harrison, Dean of the School of Science, will be toastmaster. This meeting, featuring progress in photography high speed and textiles, will begin with a steak dinner at 6:00 P.M. Prior to the meeting, facilities of the M.I.T. Faculty Club (50 Memorial Drive) will be available to Alumni attending this meeting.

Alumni of Metropolitan Boston are urged to attend this annual event at Technology, and to bring as their guests, boys of high school age for whom the program is expected to have great interest.

### Geology and Geophysics

A WIDE range of problems of importance to the Department of Geology and Geophysics was discussed on April 22, 1952, when the Department's Visiting Committee met at the Institute.\* Members who attended were: Robert T. Haslam, '11, chairman, E. L. DeGolyer, Alfred T. Glassett, '20, Cecil H. Green, '23, and Robert B. Sosman, '04. In addition, the following administrative officers of the Institute were present: James R. Killian, Jr., '26, President; Julius A. Stratton, '23, Vice-president and Provost; George R. Harrison, Dean of the School of Science; Walter H. Gale, '29, Secretary; and Professor Robert R. Shrock, Head of the Department of Geology and Geophysics.

The Administration recently approved the Department's request for a change of name to the Department of Geology and Geophysics. This change was requested because the students now enrolled in Course XII, as well as those approved for the year 1952-1953, are about evenly divided between the present options, geology and geophysics, and also because the Department has requested the Administration to approve changing these options to separate courses.

The discussion then turned to consideration of the major problems to be worked out by the Department.

The first and most important problem now facing the Department is that of insuring a steady flow of good students into the Department upon completion of their freshman year. For the year 1951-1952 a total of 10 sophomores entered Course XII, and for the year 1952-1953 this number has been raised to 12. These figures are not far from the optimum of 12 to 15 students per year, but Dr. Haslam emphasized the thought that every effort should be made to assure a steady flow of sophomores in the study of geology and geophysics. It was also pointed out that Technology

\* Members of this Committee for 1951-1952 were: Robert T. Haslam, '11, chairman, Godfrey L. Cabot, '81, Louis S. Cates, '02 (replaced by Alfred T. Glassett, '20), Robert B. Sosman, '04, Cecil H. Green, '23, Guillermo Zuloaga, '30, and E. L. DeGolyer.

Alumni throughout the country, if better informed about the work now going on at the Institute in geology, might be quite helpful in interesting local high school students in pursuing geological studies at M.I.T.

Next in importance to the Department is the need to maintain an adequate flow of graduate students, and to assure that qualified students are financially able to continue their studies. Dr. Shrock stated that 37 graduate students have been admitted to the Graduate School for study in the Department of Geology and Geophysics for the year 1952-1953, and that these constitute the largest and most promising group of graduate students ever admitted to the Institute for work in the Department. Although this graduate group is the largest ever, every effort must be made now and in the future to assure a steady flow of the best possible graduate students into the Department. It was pointed out that of these 37 students, 30 will be supported financially in one way or another, and that three of the remaining seven need financial assistance of some kind. This situation emphasizes what seems to be a general condition throughout the country; namely, that most graduate students need financial assistance of some kind, and they will tend to go where they can get it. It behooves the Institute, therefore, to make every effort to find ways by which it can partly, or fully, support high-quality graduate students while they carry on their program of instruction and research leading to advanced degrees.

The third problem facing the Department and anticipated in the preceding discussion is that of raising funds for the support of graduate students and for the purchase of experimental and instrumental facilities needed for these students and for staff members to carry out the fundamental research that has become an important part of departmental operations. It is the Department's feeling that every effort should be made to find endowment funds of some sort to make it possible to plan research on a long-range basis, independent of government funds.

The final problem facing the Department is that of finding a geologist and at least one geophysicist to round out the instructional staff. The members of the Visiting Committee feel that the two courses of study (geology and geophysics) are about as good as can be offered at the present time, if the Department wishes to train undergraduates in basic science along with geology or geophysics. Most of the Committee felt that this kind of program should be carried on at M.I.T. because of the unique opportunities provided by the close liaison of the Departments of Mathematics, Physics, Chemistry, and Geology, and furthermore because there is at M.I.T. a strong tradition favoring extensive training in the fundamentals of science as a basis for any professional field. It was felt that such a program was advisable even though it did not produce bachelors who were sufficiently specialized to enter any particular field with much detailed knowledge of how things were done in that field. One member of the Committee, however, felt that the present program in geology too strongly emphasized mining or "hard-rock" geology, and was not as complete as might be desired for the training of petroleum or "soft-rock" geologists. For the present, greater em-

phasis on petroleum geology is deferred until a satisfactory appointment can be made for an opening in the Department.

There seemed to be a consensus that every effort should be made by all interested parties to inform the public more fully about the two programs the Department now has in operation, and about the needs of the Department, in terms of students, funds and personnel, to continue to improve its program of instruction and research. As a part of this program of informing the public, several means were suggested — an informative booklet, lectures to students and the general public, improved exhibits, papers at meetings, participating in conferences and symposia, sending out of reprint lists at regular intervals.

The report of the Visiting Committee was presented at the October 6, 1952, meeting of the M.I.T. Corporation, and at the October 24 meeting of the Executive Committee. On November 19, material was received for publication in *The Review*.

### ***Jobs for Students and for M.I.T.***

RAYMOND H. BLANCHARD, '17, presided as chairman of the Visiting Committee on the Division of Industrial Coöperation at its two-day meeting at the Institute on March 26 and 27, 1952. In addition to members of the Visiting Committee,\* 11 members of the Institute's Administration took part in these meetings, at one time or another, to offer reports or discuss special phases of the D.I.C. activities. The report of the Visiting Committee, reviewed at the October 6, 1952, meeting of the M.I.T. Corporation and the October 24 meeting of the Executive Committee, was received for publication in *The Review* on November 19.

The problems of Student Placement, Alumni Placement, and the contract-research activities of the Division of Industrial Coöperation were carefully reviewed by the Committee who heard reports from: Nathaniel McL. Sage, '13, Director; F. Leroy Foster, '25, Associate Director; Professor Carlton E. Tucker, '18, in charge of Student Placement; Mrs. Evelyn B. Yates, in charge of Alumni Placement; as well as from James R. Killian, Jr., '26, President of M.I.T.

Reporting on the placement of graduates, Professor Tucker stated that the Institute maintains an active program of obtaining employment for students upon graduation, in spite of the present heavy demand for engineers, especially in the fields of electrical, mechanical, and chemical engineering. During the spring of 1952, it was usual for from six to 12 representatives from industrial concerns to visit the Institute daily to interview students for positions in industry; in some cases as many as 18 personnel representatives were accommodated in a single day. It is the practice of industrial representatives to announce their visits about two weeks in advance, and for the Placement Advisers in each department of the Institute to prepare lists of suitably qualified men who are available for employment so that they may be interviewed by personnel representatives from industry. By making such a preliminary screening, the Placement Bureau saves

\* Members of this Committee for 1951-1952 were: Raymond H. Blanchard, '17, chairman, John W. Crowley, Jr., '20, William J. Sherry, '21, Thomas H. West, '22, Isaac Harter, Beauchamp E. Smith, and Irvin Stewart.



the time of students and of visiting personnel industrial representatives, and maximizes the probability of finding the right student for the right job. As compared to 235 companies who visited the Institute during 1950, some 400 companies sent representatives to M.I.T. during 1951-1952, Professor Tucker stated.

As Alumni Placement Officer, Mrs. Yates reported that there is virtually no unemployment among M.I.T. graduates, although approximately 850 graduates register each year with the Alumni Placement Office in order to be available for better positions than those they now hold, or to take positions in different parts of the country. The problem of relocation is easy for those earning less than \$600 per month, but considerable time and effort are still required to make worthwhile changes at this salary or more. The demand for Technology Alumni is about four times as great as the number of men available for any kind of change in their professional work, and there is no sign that this demand will slacken in the near future.

In reporting on the research activities of the Division, Mr. Sage reminded the members of the Committee that the D.I.C. is highly decentralized and that while it administers the business phases of research contracts with the Institute, the technical aspects of contract research rest with members of the Institute's Faculty, except in rare instances. Members of the Committee were favorably impressed with the efficient administration of an extensive and complex activity, but expressed concern with the fact that an exceedingly large part of the dollar value of the Institute's contract research is done, directly or indirectly, for the United States Government. The Committee felt it desirable to achieve a greater diversification of sponsorship of research contracts and recommended that serious consideration be given, and future planning be made, to meet new conditions that may be expected to arise in the termination or withdrawal of the large volume of government development contracts.

On the afternoon of March 26, President Killian discussed with members of the Visiting Committee, the nationwide shortage of engineers. In aiming to attract the best qualified students to the Institute, President Killian pointed out that M.I.T. faces competition from other schools who offer higher subsidy through scholarships. Plans for obtaining additional funds for scholarship aid for outstanding students were also outlined by Dr. Killian.

In view of the great need for additional graduate engineers, the Committee recommended that M.I.T. expend every effort to increase its freshman class, commensurate with the facilities for properly instructing entering students, and without lowering standards in the training of students during their four years of study at the Institute.

The Committee concluded that an excellent job is being done in both Student and Alumni Placement activities. On the basis of comparisons with other colleges, who are making good records in placement work, it appears that the Institute is doing an outstanding job among colleges and universities in this field.

The Committee also concluded that the Division of Industrial Cooperation is being capably administered by an extremely versatile and enthusiastic organiza-

tion of minimum size for the work being done. The Division is to be particularly commended for the efficient and smooth-working relationships which have been established with the government and industry in all phases of the administration of contract research.

## ***Defense Laboratories***

THE size of the Lincoln Laboratory and its anticipated removal from the M.I.T. campus to Bedford have led to a decision to separate this project administratively from other activities of the Division of Industrial Cooperation.

To accomplish this separation and to provide Lincoln Laboratory the fullest support, the Executive Committee of the Corporation has approved a new administrative unit of the Institute to be known as the Division of Defense Laboratories. This Division, established in January, will assume the responsibility for all Institute services necessary for the management and support of Lincoln Laboratory. The over-all direction of Lincoln Laboratory will continue to be the responsibility of Professor Albert G. Hill, its Director. The new Division will provide the fiscal support and co-ordination of services and policies which the Division of Industrial Cooperation provides for its projects. The organization and procedures of the new Division will therefore parallel those of the Division of Industrial Cooperation, and its administrative relationship to the Institute will be the same as that of the Division of Industrial Cooperation.

Horace S. Ford, Treasurer Emeritus and a life member of the Corporation, will serve as acting director during the formative period of the Division. The associate director will be Paul V. Cusick who remains assistant director and fiscal officer of the Division of Industrial Cooperation.

## ***Executive Development Program***

THE long-established Executive Development Program, covering one year of advanced study in industrial management at M.I.T. will be substantially expanded in 1953-1954. E. P. Brooks, '17, Dean of the School of Industrial Management, has announced plans for the 1953-1954 program and for the Sloan Fellowships which will be awarded. The fellowships, he said, will be given to young industrial executives who have already demonstrated their ability to grow into major management responsibilities and who are assured of opportunities for constructive leadership in their companies.

With an increase by the Alfred P. Sloan Foundation, Inc., in the funds available, the Executive Development Program will in 1953-1954 serve two groups of 15 to 18 fellowship recipients. A nationwide competition for fellowships will close this year on February 21, 1953.

Participation in the Executive Development Program is limited to recipients of Sloan Fellowships. Nomination by an employer is a prerequisite, since employers co-operate in the program by sponsoring these men and by providing successful candidates with a year's leave of absence and financial aid. Gerald B. Tallman, Associate Professor of Marketing, is director of the Sloan Fellowship Program.

# BUSINESS IN MOTION

## *To our Colleagues in American Business ...*

From time to time Revere, through its advertising, its salesmen, its Technical Advisors, and its printed literature has stressed the fact that cost per pound of material is not so important as cost per finished part. It is actually the case that sometimes metal that has to be billed at a higher price, either because of its form or its composition, actually effects savings that much more than compensate for the extra cost.

Perhaps as a result of the educational work we have done on this subject, an alert purchasing agent for one of our customers inquired as to the possibility of switching from bar stock to an extruded shape. The Sales Department and the Technical Advisory Service collaborated with the purchasing, engineering and production people, and a plan was worked out, which is saving important sums.

The company makes electric welding machines, and the part involved is called a secondary pad. It is made of copper, for high conductivity. Previously it had been machined out of solid bar stock, 2" x 3½". This was costing \$11.73 per foot.

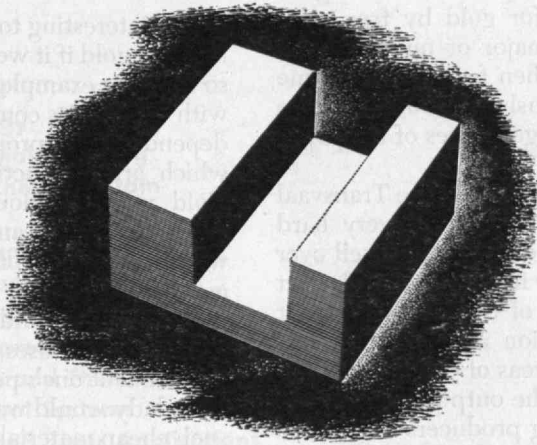
The extruded shape that was substituted for it weighs 25% less. The cost per foot is \$10.03, which represents a saving of \$1.70 per foot. You can see right from those figures that paying a little more per pound for the extruded shape saves money. But in

addition to that, the customer estimates that the shape has cut machining time by 50%, and as every manufacturer knows, machining is costly, and cutting it in half achieves a significant economy. Other advantages include less scrap, and faster output. A report from a Revere Technical Advisor states: "Customer has found the extruded section very satisfactory and bases his machining time-saving on production runs and not estimates".

Extruded shapes are made by forcing heated metal through a die of the desired profile, much like squeezing toothpaste from a tube. This offers unique opportunities for an infinite variety of shapes; the one shown here is simple; much more complex forms are possible. There is an obvious limitation: all grooves and slots must be parallel to the axis of extrusion.

If you are doing any extensive machining of rod or bar in copper and its alloys, or aluminum alloys, a Revere salesman will be glad to consult with you regarding the possibilities of extruded shapes. They cost a bit more per pound, but in the end may save you money.

As a matter of fact, it is true in many industries that a material that costs more per pound or ton or gallon may actually in the end cost less. So we would like to suggest that no matter what you buy for processing, it is possible that by paying a little more for something special you might save a lot.



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## GOLD IN FACT, FICTION, FINANCE

(Continued from page 210)

vaal. The gold is readily precipitated as metal from the cyanide solution by the addition of metallic zinc dust and recovered by filtration. This process put Africa far in the lead as a gold producer, a position which still remains unchallenged.

The solvent power of cyanide solution for gold was known in 1863 but for some strange reason no important commercial application was made until after 1890. The importance of the method lies in the fact that large amounts of finely crushed or ground material containing as little as 0.1 ounce of gold per ton may be treated profitably, whereas only relatively rich ores are suitable for profitable treatment by amalgamation.

### Discovery and Production of Gold

Gold was discovered in California in January, 1848, and in Australia in February, 1851. These events gave a great impetus to the hunt for gold by free men. Various other discoveries of major or minor importance have been made since then from time to time but, except for the Klondike rush in 1899, they have not claimed the attention of large masses of the population.

The development of the gold mines in the Transvaal began in the 1880's. These mines are in very hard rock and have been driven in some cases to well over a mile in depth requiring heavy investments and great engineering skill. The amount of the Russian output is high but the exact production is not known. Exploration of the gold-bearing areas of Canada is being carried on systematically and the output is increasing at a rapid rate. The six leading producers of gold, in 1891 and in 1949, are given in the following table with production given in troy ounces:

	1891	1949
U.S.A.	1,317,700	1,921,949
Australia	1,247,306	
Russia	871,060	7,000,000 (estimated)
South Africa	567,100	11,705,048
Canada		4,103,856
All Others	2,764,500	5,800,000
World Total	6,767,666	30,530,853

In 1492 the annual rate of the world's production of gold was about 186,000 ounces and rose gradually, with minor fluctuations, until it reached about 650,000 ounces in 1847. The discovery of gold in California, and soon after in Australia, caused the production to rise sharply to nearly 10 times this figure in 1856. From this point there was an irregular decline to about 4,643,000 ounces in 1883, followed by a slow rise to 1893 when it again approached the 1856 production. Then came the introduction of the cyanide process, the increasing importance of the South Africa mines, the Alaska rush, and the development of Canadian mines, all of which resulted in a peak output of 15,036,000 ounces in 1899. Several years of fluctuation followed until another peak of 22,606,000 ounces was

reached in 1912. An all-time high was reached in 1940 with 41,216,000 ounces, after which production declined to 30,600,000 ounces in 1949.

The total world's production of gold, from the discovery of America in 1492 to and including 1949, is approximately 1,656,065,000 troy ounces. Of this amount 1,168,229,000 ounces, or about 70 per cent, have been produced in the present century. The weight of a cubic foot of gold is 1,206 pounds or 17,587 troy ounces. It follows, therefore, that the world's production of gold from 1492 to 1949 amounts to 94,221 cubic feet or, in round numbers, a cube having an edge of 46 feet. The gold produced at the 1940 peak would occupy 2,344 cubic feet or a cube about 13½ feet on a side.

At \$35.00 per ounce the total value of the gold produced in 1949 amounts to \$1,071,000,000, and for the total production from 1492, to and including 1949, the value is \$57,962,275,000 — which wouldn't go far in paying the expenses of the United States Government for one year.

### Gold-plated Bathtubs!

It is interesting to speculate on what uses would be made of gold if it were relatively abundant and cheap, so that, for example, it might be on a commercial par with copper. Its competitive position would doubtless depend on its properties, the most outstanding of which are its ductility and resistance to corrosion. Gold would undoubtedly be used extensively for sheets and tubes, and for gold-plating. Our plumbing would be largely of gold, gold alloys, or gold-plated material. We might not go so far as to pave our streets with it but it would be valuable as a roofing material and for similar uses. Would it still be used for jewelry to ornament one's person? Probably it would not — for what lady would want to burden herself with rings of such cheap material?

### Monetary Gold

The gold standard, or the official use of gold as a basis for other currency, was established in England in 1816, and similar action was taken by the United States in 1873. An adequate discussion of the merits of the gold standard and the objections to it would require space far beyond the bounds of this article, and it would be presumptuous for a metallurgist to undertake it. By mere chance the writer was a spectator in the New York Stock Exchange in September, 1931, when the news was received that England had abandoned the gold standard, and the memory of the excitement which the announcement produced is still vivid. The United States did not abandon the gold standard until April, 1933, as most of the readers of The Review will recall.

In the present chaotic condition of the world, it would be difficult to re-establish gold as a basis for currency under conditions which would be generally acceptable to the financiers of the leading nations. It is argued by some that insufficient gold exists in the world for this purpose, and this argument has been answered by the suggestion that some combination of gold, silver, and platinum might be used. If this recalls

(Continued on page 218)

# Massachusetts Institute of Technology

## SPECIAL SUMMER PROGRAMS

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and educational institutions

<b>Strength of Materials</b>	2 weeks	July 6-July 17
<b>Industrial Photoelasticity</b>	2 weeks	Aug. 10-Aug. 21
<b>Strain Gage Techniques</b>	1 week	Aug. 24-Aug. 28
<b>Aerodynamic Measurements</b>	2 weeks	June 16-June 26
<b>Lubrication Engineering</b>	2 weeks	June 16-June 26
<b>Thermodynamics</b>	2 weeks	June 29-July 10
<b>Product Design</b>	2 weeks	July 6-July 17
<b>Fluid Power Control</b>	2 weeks	July 6-July 17
<b>Metal Cutting</b>	2 weeks	June 16-June 26
<b>Textile Research</b>	4 weeks	July 6-July 31
<b>Casting Light Metals</b>	1 week	Aug. 31-Sept. 4
<b>Physical Metallurgy</b>	2 weeks	June 16-June 26
<b>City and Regional Planning</b>	2 weeks	Aug. 24-Sept. 4
<b>Science Teachers Program</b>	6 weeks	June 29-Aug. 7
<b>Electrical Methods of Instrumental Analysis</b>	1 week	Aug. 17-Aug. 21
<b>Optical Methods of Instrumental Analysis</b>	1 week	Aug. 24-Aug. 28
<b>Technique of Infrared Spectroscopy</b>	1 week	July 6-July 10
<b>Applications of Infrared Spectroscopy</b>	1 week	July 13-July 17
<b>Digital Computers and Their Applications</b>	2 weeks	Aug. 24-Sept. 4
<b>Feedback Control Systems</b>	2 weeks	June 22-July 3
<b>Transistors and Their Applications</b>	2 weeks	July 20-July 31
<b>Noise Reduction</b>	2 weeks	Aug. 24-Sept. 4
<b>Occupational Health, Management Responsibility for</b>	1 week	June 22-June 26
<b>Operations Research</b>	3 weeks	June 16-July 3
<b>Control Problems of the Executive</b>	3 weeks	June 16-July 3
<b>Automatic Control of Aircraft</b>	2 weeks	Aug. 24-Sept. 4
<b>Food Technology</b>	3 weeks	June 29-July 17
<b>Math. Problems of Communication Theory</b>	1 week	July 6-July 10

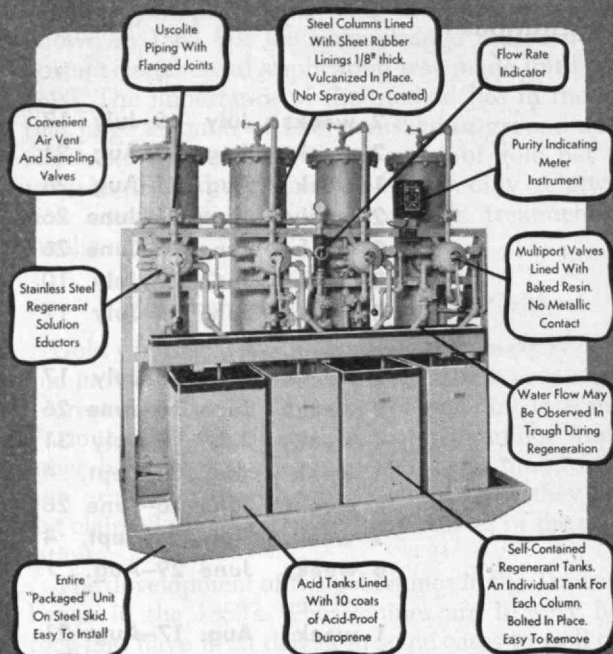
Living accommodations in the Everett Moore Baker House and the Alfred Edgar Burton House will be available at nominal rates for all registrants in any of the above Special Summer Programs, including rooms for married couples or for single women. All summer guests are invited to use the Institute's libraries and recreational facilities, including the Alumni Swimming Pool, the Sailing Pavilion, tennis courts and Faculty Club.

In addition to the above Special Summer Programs the 1953 Summer Session includes many regular M.I.T. subjects of instruction together with numerous conferences or symposia in various professional fields. Further details of individual Special Summer Programs, including participating staff, special lecturers, tuition, general descriptive folders and blanks of application for admission will be sent upon request.

Prof. Ernest H. Huntress, Director of the Summer Session, 3-107, M.I.T., Cambridge, Mass.



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## GOLD IN FACT, FICTION, FINANCE

(Continued from page 216)

the reaction to William Jennings Bryan's "Cross of Gold" speech at the Democratic Convention in 1896 and his campaign for coining both silver and gold in the ratio of 16 to one, it might be suggested that other radical ideas of Bryan's time are now accepted as sound. There is much to be said in favor of a metallic base for currency, and its re-establishment is worthy of further consideration as we try to smooth the way for international trade.

Even in these days when the great powers all conduct their internal affairs without the use of gold coins, it is worthy of note that gold bullion is still transferred from country to country in an attempt to balance the exchange. This is recognition of the fact that, unofficially, gold is still considered as a monetary factor.<sup>6</sup>

The movement of gold to the United States became very heavy after the price was raised to \$35.00 per ounce by decree of President Roosevelt, on January 31, 1934. At that time an interesting remark was made to the writer by Colonel Samuel C. Vestal, then Head of the Department of Military Science at M.I.T. Colonel Vestal stated that one of his friends in Washington had written that among the gold shipments received from France were some, still in the original packages, that had been sent across the Atlantic by this country for the Louisiana Purchase.

In 1937, the United States mint estimated the total world's monetary stocks of gold to be \$23,000,000,000 at \$35.00 per ounce, of which this country held more than \$11,000,000,000. On October 18, 1938, the United States stock had risen to \$14,008,236,361, which is well over 10 times the total estimated amount of gold in the world in 1492.

### Golden Opportunity

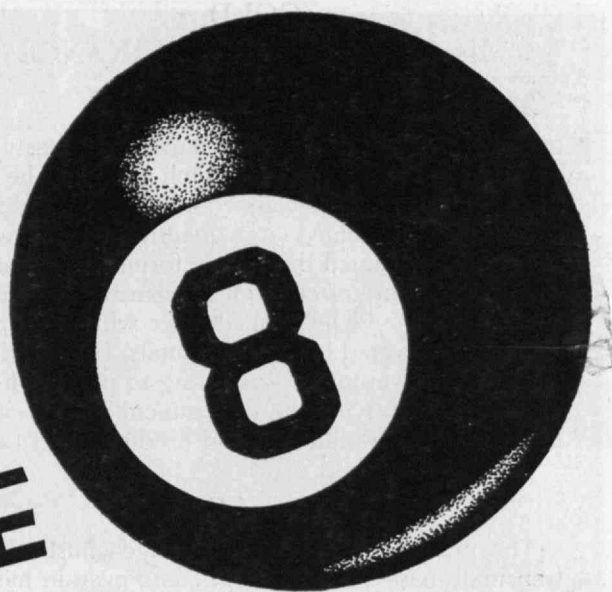
No general discussion of gold would be complete without reference to the attempts throughout all history to produce gold from other substances. Mythology tells of King Midas who prayed to the gods for power to transform into gold everything he touched, and soon discovered that this power brought more trouble than benefits. His prayer to have the power removed was answered by the command to wash in the river Pactolus. The considerable amount of placer gold extracted in later years from this stream was ascribed to this event. The gold accumulated by Croesus came principally from the river Pactolus.

The determination of gold in ores by means of fire assaying has been standard practice for 300 years or more, and metallurgical extractions have conformed closely to the results obtained by this procedure. In spite of this, men have appeared from time to time who claimed to have discovered procedures which

(Concluded on page 220)

<sup>6</sup> Numerous discussions of the role of gold in international economy have appeared during the past two decades. For a brief modern discussion the reader is referred to a series of articles by J. P. de Wet, appearing in the March, April, May, and July, 1952, issues of the *Canadian Mining Journal*.

# DON'T WIND UP BEHIND THE

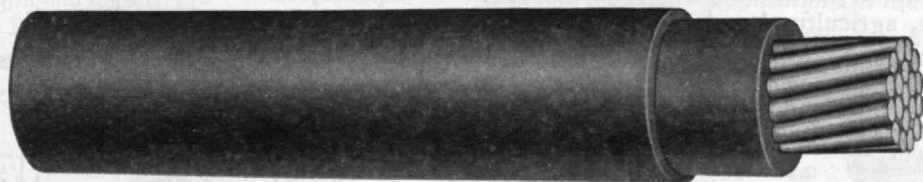


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## GOLD IN FACT, FICTION, FINANCE (Concluded from page 218)

gave higher results than those shown by fire assaying. The writer has known several such persons. The most recent was a man who claimed that the rock adjacent to gold veins contained large quantities of gold which had not yet assumed the atomic form. He claimed to have a procedure of electron bombardment whereby gold atoms would be formed after which the metal could be recovered by usual methods. He stated that the British government was trying to prevent its use for fear of destroying the pre-eminent position of the British Commonwealth in gold production.

### *Destiny of Gold*

The principal objective of the alchemists was to transmute base metal into gold, and even in modern times innumerable procedures have been suggested. Any day now some nuclear physicist may startle the world with an announcement along this line.

However, we need not worry over these problems, for gold seems destined to remain scarce and expensive, unless some genius succeeds in extracting it economically from sea water. The oceans of the world, according to the *Encyclopaedia Britannica*, contain about 10 billion tons (yes, tons) of gold waiting for someone to get it out. Perhaps it is this gold which will be used to pave the streets of the New Jerusalem.

## SCIENCE PUBLICITY (Continued from page 206)

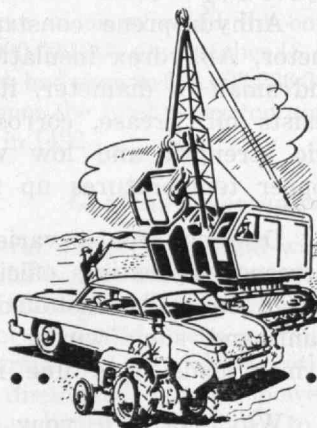
Many scientists of very mature judgment believe there has been a very serious decline in the popularity of their profession during the past few years. They have begun to feel themselves subject to public suspicion, recrimination, and fear. Their loyalty is questioned, their internationalism is frowned on, and their interest in the work of colleagues in Iron Curtain countries is made to seem little short of treason.

A knowledge of the tactics and strategy of science helps to interpret these things properly. Exchange of information is an essential to scientific progress, and international boundaries have no inherent relation to this process; scientists in Russia and East Germany may have as much to contribute to the question of cancer as those in Japan or Sweden. When suspicion attaches itself to the practice of internationalism, then scientists must expect to be viewed with suspicion.

There is no doubt that some scientific and engineering laboratories now need to be protected from espionage on the basis of their contributions to national security. In these cases, no one will argue against "clearances" to make sure that the laboratory workers are men of loyalty and sound judgment. But this, too, has its dangers to scientific enterprise. Scientists are especially jealous of what Kirtley F. (Continued on page 222)



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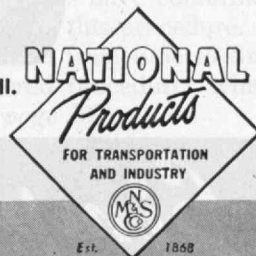
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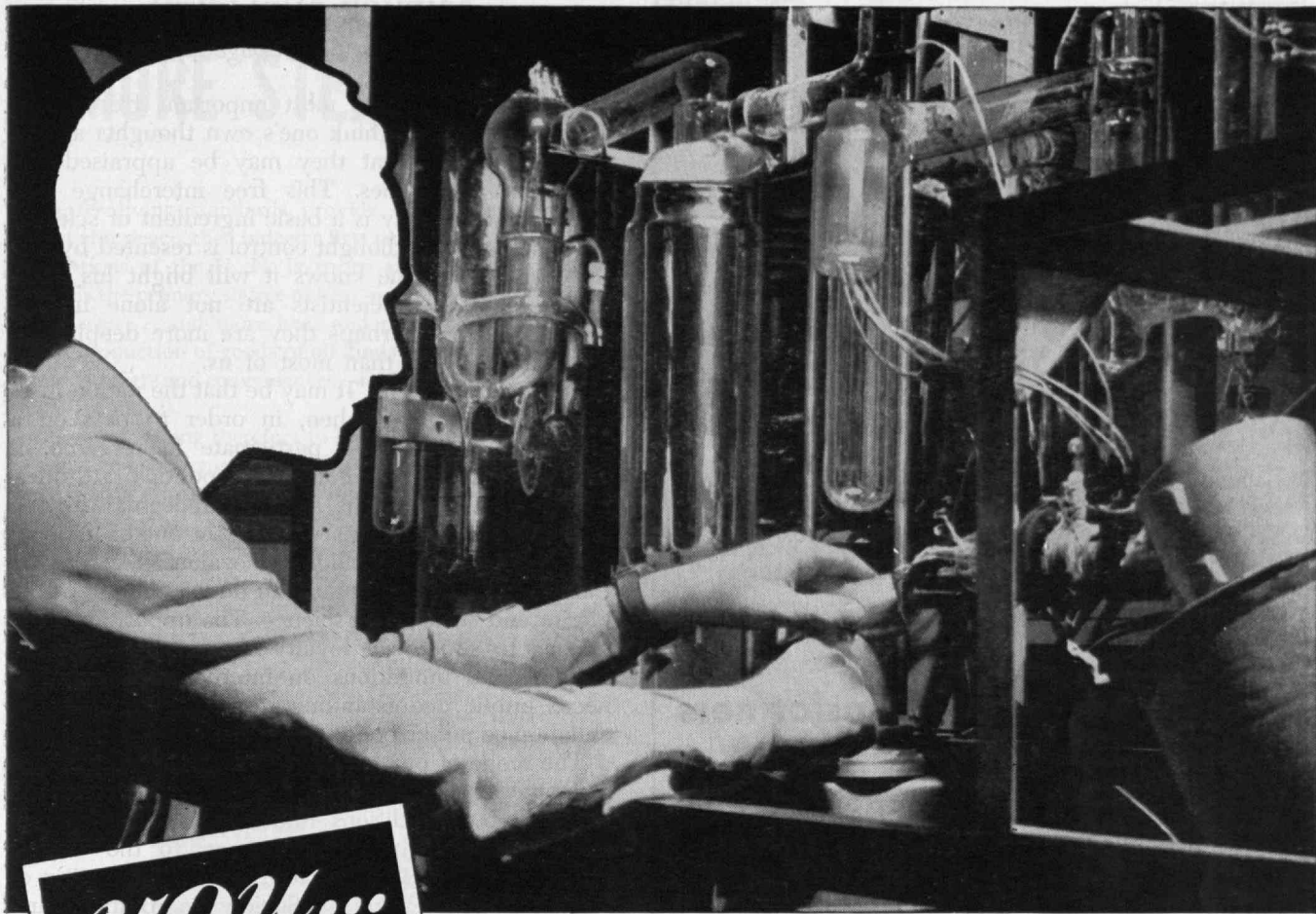
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Mather calls "the one most important freedom of all, the freedom to think one's own thoughts and to express them so that they may be appraised" by their own colleagues. This free interchange and intellectual integrity is a basic ingredient of science; any semblance of thought control is resented by any scientist because he knows it will blight his intellectual activities. Scientists are not alone in this abhorrence, but perhaps they are more deeply and critically involved than most of us.

Says Dr. Gellhorn: "It may be that the nation loses more than it gains when, in order to pass on a scientist's eligibility to participate in research, it seeks to examine and confine his political attitudes, his personal associations, and his intellectual drifts."<sup>9</sup> The question, and it is a very urgent one of national policy, cannot be intelligently evaluated except by those who have, once more, an understanding of the tactics and strategy of science. The opposition from science to superficial loyalty checks, extensions of secrecy, and limitations on international exchange needs public understanding from which may come enlightened public policy.

The scope of our problem is becoming clear. "We cannot escape the necessity of giving thought and effort to the conditions under which science and scientists make their contributions to the world's progress," E. U. Condon told the 1952 meeting of the American Chemical Society in Buffalo, and stated: "These conditions are not good in America today." But the question of how we may proceed is less obvious. In 1940, Vannevar Bush, '16, concluded that "science can be interpreted effectively only for those who have more than the usual intelligence and innate curiosity." To this gloomy prediction our democratic society must, somehow, take exception, now that science has become so vastly dependent upon public affairs for a constructive and understanding environment.

The required solution is a matter of education, and schools and colleges everywhere are studying how best to contribute to these new needs. Most college freshmen are now exposed to a general education program, the science phase of which is designed primarily to develop an understanding of the tactics and strategy of science. In high schools the situation is less favorable; the problem is less understood, the resources are fewer, and a very small proportion of students come into contact with courses of any kind worthy of being identified with serious science. Formalized adult education programs are a very meager power in today's busy living.

Newspapers, magazines, radio, and television remain the sources from which most citizens will acquire their facts and impressions about scientific affairs. This acquisition is a subtle process about which we know very little. But the challenge to those of us who seek to interpret science to the disciples of these mass mediums is clear.

We seem to face a dilemma: we have found, we think, effective ways to tell about scientists' achieve-

(Concluded on page 224)

# MORE STEAM... for the United Nations

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It is encouraging therefore to know that recent years have seen a vast increase in steam generating capacity abroad as well as at home.

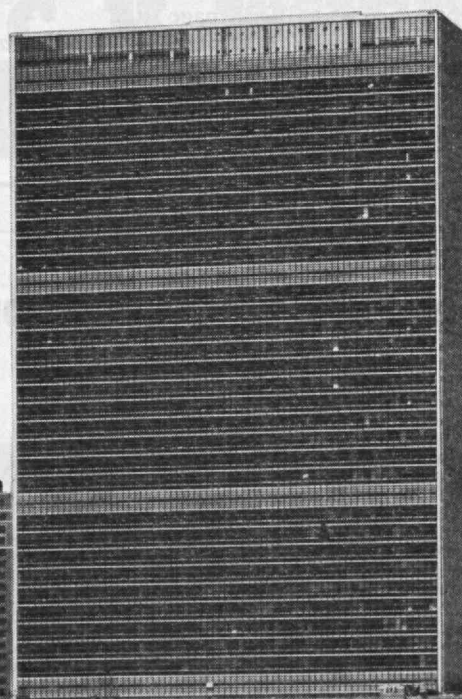
One impressive example of this is the fact that C-E Boilers are now in service or in process of installation in two out of every three member nations of the U. N. (see checks in panel at right). Many of the newer installations are for huge power generating stations which are turning new

rivers of kilowatts into the economic streams of nations in urgent need of such transfusions. And this applies also to such important non-members of the U. N. as Italy, Spain, Portugal and Japan.

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## SCIENCE PUBLICITY

(Concluded from page 222)

ments and to make science news take its rightful place in popular reading, listening, and viewing. Only the last doubters remain to be convinced of the obvious lesson that scientific enterprise pays dividends in a very practical way. But some of the techniques we have found most effective in making science interesting and readable to the nation's large nonscientist audience fail conspicuously to give a useful and constructive view of how science really works and what it really is. Indeed, some devices manage to reinforce, or even create, ideas which are absolute misconceptions.

If our experience to date with the traditional mediums of mass communication—newspapers and magazines—is at all conclusive, the outlook is not too favorable. While we have not exhausted the possibilities of the printed word, there is little promise of any revolutionary new ways for its use in treating scientific subjects.

Radio is much less explored; so are motion pictures. The documentary techniques of both have seen little use in serious efforts at communicating the methods and goals of science. In both instances there seems to be some reason for optimism and further explorations.

Still more exciting are the possibilities of television, which combines the power of sight and sound. If the potentialities of motion picture and radio are unexplored, those of television are unscratched:

science subjects are only beginning to find their place before the cameras.

No one can say how effective the various mass mediums now available to us may be in conveying an honest picture of the whole of science to the new lay administrators of science. Nor is it safe to predict that we have, at our finger tips today, the most powerful mediums to render this service. What can be said with certainty is that those of us now serving in public relations posts for the promotion of science have a new job to do, quite without precedent. We confess to be unsure of how best to fulfill our new responsibilities. But we are sure that the case cannot rest on the accomplishments of the past 30 years.

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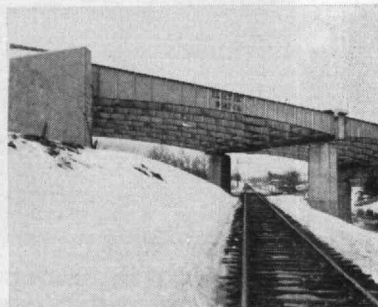
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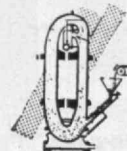
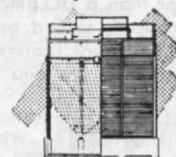
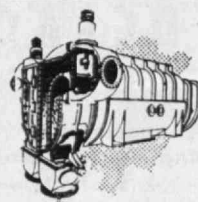
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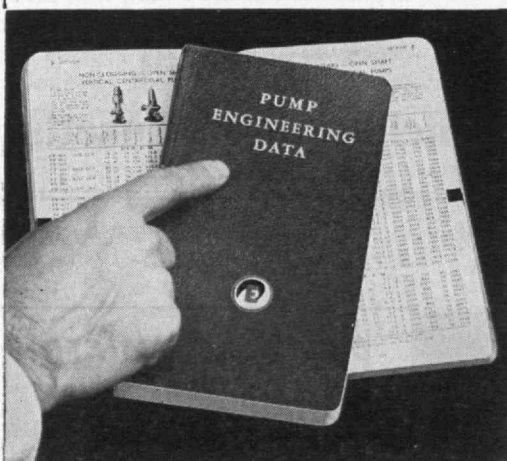


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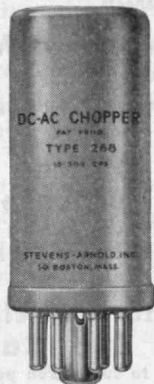
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## FOLLOWING A COLD TRAIL

(Continued from page 202)

time, and then suddenly one or more seedlings may appear which differ in some important particular. Occasionally that sport or mutant is able to propagate and maintain itself as a new variety. Gradually, mutation has become accepted as an important component of evolution. It certainly accounts for much of what Darwin considered was caused by slow evolution.

A whole science has grown up concerning heredity, following Gregor Mendel's first discovery of its principles, and the later discovery of its physical basis. Cells increase by division, ordinarily into similar parts, which develop and increase, and so on. Occasionally, a mutation takes place, and the actual chromosomes, where the units of heredity occur, undergo change. Methods have been discovered which cause a great deal of speeding up of mutation. Exposure to many destructive forces, such as x-rays, heat, electronic radiation, or treatment with certain chemicals cause changes in the chromosomes, some of which are productive of stable new plants.<sup>5</sup> The most deep-seated and frequent mutations occur when the intensity of the destructive force is such as to result in about 50 per cent survival of the treated seed, pollen, or ovule. Treated seeds have to be sprouted and followed through several generations to find out what has happened, and particularly to note if the selected variants are fertile and produce true to type. Such experimental procedures are very slow and laborious and usually are utilized only to discover the laws of heredity and of plant susceptibility to change. Some

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plant breeders consider hybridization the greatest source of instability and variation. Richard B. Goldschmidt, the geneticist, in 1940, expressed the opinion that generally species of plants have developed by macromutation, however produced, and that no connecting links therefore may exist between them and their relatives. Most botanists feel, however, that this extreme view is unwarranted, and "heritable variations in plants are now generally believed to have arisen by mutation, to have been diffused by crossing and maintained by selection."<sup>10</sup> Mutations and other aspects of heredity, interesting as they are, concern only small areas at a time of botanical relationship.

Geographic distribution can be of value in grouping plants, especially in areas such as Australia, where a few families, such as the eucalypts and the Proteaceae, have evolved extensively over a long period of time without contact with the rest of the world.<sup>1</sup> Apparently, the cactus family so developed in the Americas, for none are endemic elsewhere. Even in a desert flora all that look like cacti are not always of that family, for other groups, such as the euphorbias, the milkweeds, and even the grapevine, can adopt succulence, spines, and other cactus peculiarities. The flowers and fruit, however, continue to show some of the family characteristics. Apparently, passage of northern genera to the south, via the tropics, or vice versa, is very difficult. Certain plants, however, such as the heaths, thrive on tropical highlands and might have made the trip from one temperate zone to the other via mountain chains. Even before Alfred Wegener announced his drifting-continent hypothesis in 1924, botanists had decided that the plants of the Southern Hemisphere might all have originated together a long while ago, and then become separated and some of the species evolved independently. Recent plant hunts in Fiji, New Caledonia, and other areas north and east of Australia, have produced new plants of great interest in an evolutionary way.<sup>3</sup> Some of these species appear to be transitional, on the track leading to the most primitive of the flowering plants. These new plants are all flowering plants in one sense, but have primitive ovaries and sometimes no pistils. A few species seem even to have *open ovaries*, so that technically they might not be classifiable as angiosperms (enclosed seeds). Further search for the ancestors of the angiosperms should still be productive in these geographic areas. Such a search could become a rewarding hobby for small groups of rich explorers seeking a unique activity.

(Continued on page 228)

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## FOLLOWING A COLD TRAIL

(Continued from page 227)

The evidence points out that the monocots are sufficiently alike that they present a single relatively uniform phylum of interrelated species. Thus grass is related, more or less closely, to all the other monocots, including the lilies, the palms, and the orchids. All the monocots seem to have sprung from one original, self-perpetuating and onward-evolving monocot. The condition of monocotyledonism, also the patterns of the woody fibers, serves as a tracer to follow this great phylum, apart from all other vegetation. The original monocot appears to have evolved from the dicots scores of millions of years ago. No similarly discriminating characteristics label the dicots, which are quite various, but most botanists feel that it is possible that they, too, are monophyletic, that is, from one origin. The ancestor of the dicots is still very obscure, but present inspired guesses are that it was a seed fern now long extinct.

### At the End of the Trail

The present angiosperms are highly evolved plants, well suited to all conditions of climate and nutrition. The seed stage allows them to persist alive through such cold and drought as eventually must have killed off their predecessors, which did not have this flexibility. The seeds of the gymnosperms, which include the conifers, the ginkgoes, and the cycads were fairly effective in these same directions, but did not have the activities of insects to assist in their evolution, and

(Concluded on page 230)

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## FOLLOWING A COLD TRAIL

(Concluded from page 228)

the plants evolved much less extensively. There is evidence of at least three great cycles of large plants (trees and herbs), each an improvement over the last in its ability to survive and develop. The present cycle is still evolving, and presumably is capable of much further advance. It supplies food and shelter to great numbers of the modern-type animals, including man. It is hard to imagine, but even angiosperms may some day be supplanted by still another cycle of plants different from but perhaps descended from them.

*The author acknowledges generous help on this article from several botanical authorities, including Reed C. Rollins, Director of the Gray Herbarium, and Irving W. Bailey the Department of Biology at Harvard University.*

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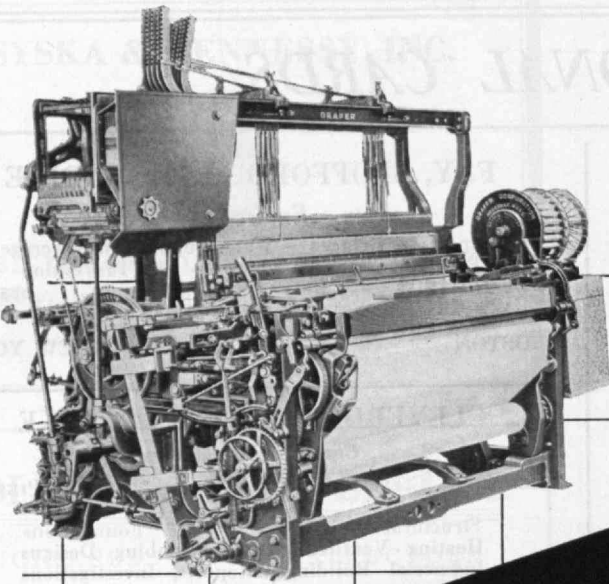
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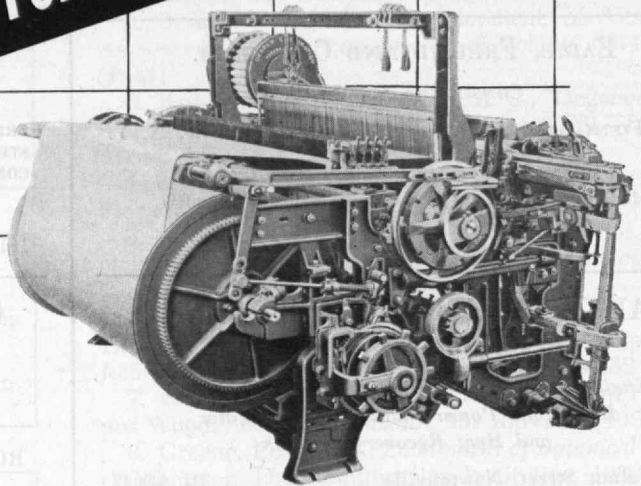
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# Alumni AND Officers IN THE News

## Honored Alumni

JAMES H. DOOLITTLE<sup>24</sup>, Vice-president of Shell Oil Company, has been awarded the 1952 Wright Brothers Memorial Trophy, awarded annually for "significant public service (as a civilian) of enduring value to aviation." Formal presentation of the trophy was made on December 17 in Washington, D.C. Dr. Doolittle's outstanding achievements as a civilian include his direction of the Guggenheim Foundation's pioneering work in instrument flying in the middle twenties, as well as his recent work as chairman of the President's Airport Commission.

JOHN STACK<sup>28</sup>, assistant director of the Langley Aeronautical Laboratory of the National Advisory Committee for Aeronautics, is the winner of the Collier Trophy for 1952. The award, announced in December, has been given to Mr. Stack primarily for his work in perfecting a transonic wind tunnel.

FRANCIS X. FOREST<sup>31</sup>, planning officer at the Portsmouth Naval Shipyard, Portsmouth, N.H., has been honored by the Society of Naval Architects and Marine Engineers. Captain Forest, together with F. H. Todd, chief Naval architect of the David W. Taylor Model Basin, received the Captain Joseph H. Linnard Prize, given annually for the best paper presented to the society during the year.

## Elections and Promotions

DUNCAN SHAW<sup>14</sup> has been appointed executive vice-president of Oley Products, Inc., of Oley, Pa.

CHARLES J. MCCARTHY<sup>16</sup>, Vice-president of the United Aircraft Corporation, has been elected president of the Institute of the Aeronautical Sciences.

JOHN W. BARRIGER<sup>21</sup>, President of the Chicago, Indianapolis and Louisville Railway (Monon), has been appointed a director and vice-president of the New Haven Railroad.

WALTER F. MUNFORD<sup>23</sup> has been appointed president of American Steel and Wire Division of U.S. Steel.

ALBERT S. REDWAY<sup>23</sup>, President of the American Paper Goods Company of Kensington, Conn., was elected first vice-president of the Manufacturers Association of Connecticut.

The Department of State named WALTER T. ROLFE<sup>23</sup>, of the architectural firm of Golemon and Rolfe in Houston, Texas, to the United States Commission for UNESCO, a 100-member body which is expected to advise the United States delegation to the UNESCO General Assembly on policy matters. The American Institute of Architects said that Mr. Rolfe is the only American member of his profession on the commission.

The American Association of Textile Chemists and Colorists elected J. ROBERT

BONNAR<sup>27</sup>, technical director of General Dyestuff Corporation, as president of the association.

PROFESSOR ALBERT G. H. DIETZ<sup>32</sup>, of the Department of Building Engineering and Construction at M.I.T., has been appointed chairman of the Committee on Education of the Society of the Plastics Industry. In this connection, Professor Dietz has been advising the dean of the Lowell Textile Institute on setting up the school's curriculum in plastics.

DONALD L. HERR<sup>39</sup>, head of research and development of the Production Coordination Department, Hughes Aircraft Company, has been elected president and director of American Electronic Manufacturing, Inc., Los Angeles, Calif.

J. HERSCHEL FISHER<sup>40</sup>, of the firm of Wiltshire and Fisher, was elected president of the Dallas, Texas, chapter of the American Institute of Architects.

ARTHUR H. KULJIAN<sup>48</sup>, chief mechanical engineer for the Kuljian Corporation of Philadelphia, Pa., has been elected vice-president in charge of engineering of the corporation.

## Featured in the News

Two M.I.T. Alumni have been featured in the Boston Sunday *Globe* magazine section, in connection with the valuable jobs they carry out. In the December 14 issue, JOSEPH W. FOWLER<sup>21</sup>, civilian head of the new Defense Supply Management Agency, is cited for his task of compiling a catalogue of all the articles which the armed forces buy, as an aid in eliminating duplications.

ELLIOTT B. ROBERTS<sup>21</sup> is featured in the December 28 issue of the paper. As chief of the Division of Geophysics of the Coast and Geodetic Survey, he has charge of the nation's first earthquake research program, including establishment of a network of seismograph stations all over the country.

## Pen and Platform

The "guest editorial" for the December, 1952, issue of the *Aeronautical Engineering Review* was written by JEROME C. HUNSAKER<sup>12</sup>, and is entitled "Aeronautics—Some Social Aspects." The editorial consists of excerpts from a paper written by Dr. Hunsaker, and read before the Eighth International Congress for Theoretical and Applied Mechanics at Istanbul, Turkey, August, 1952.

MILTON E. PARKER<sup>23</sup>, of the Illinois Institute of Technology, is coauthor of a newly published textbook, *Elements of Food Engineering* (New York: Reinhold Publishing Corporation, 1952). The book is described as the first in its field.

RALPH M. EVANS<sup>28</sup>, together with W. Lyle Brewer and Wesley T. Hanson, Jr., all with Eastman Kodak Company, authored *Principles of Color Photography*

(New York: John Wiley and Sons, Inc., 1953).

WILLIAM SHOCKLEY<sup>36</sup>, of the Bell Telephone Laboratories, delivered the annual Sigma Xi national lecture at the University of Rochester on December 9. The topic of Dr. Shockley's address was "Transistor Physics."

## Obituary

HORACE B. GALE<sup>83</sup>, December 3.  
A. STUART PRATT<sup>84</sup>, December 3.  
JAMES L. KIRKPATRICK<sup>88</sup>, November 27.  
LEMUEL B. HOLMES<sup>90</sup>, March, 1952.  
KARL H. HYDE<sup>90</sup>, December 13.  
EDGAR L. HAMILTON<sup>91</sup>, May 4, 1950.  
EDWIN C. SMITH<sup>91</sup>, October 30.\*  
GEORGE H. SPOONER<sup>91</sup>, May 23.\*  
HERBERT ARMSTRONG<sup>93</sup>, August 6.  
EDWIN C. ALDEN<sup>95</sup>, November 26.\*  
HUNSDON CARY<sup>95</sup>, September 17.\*  
ROBERT S. WASON<sup>96</sup>, November 8.\*  
LYMAN ARNOLD<sup>98</sup>, December 27.  
MRS. MAX F. BLAU<sup>98</sup>, October 22, 1949.\*  
ROBERT S. DEGOLYER<sup>98</sup>, October 11.\*  
WALTER H. LEE<sup>98</sup>, November 9.  
DAVID H. MACFARLANE<sup>98</sup>, February 1, 1950.

RALPH W. LOUD<sup>99</sup>, December 14.\*  
JOSEPH P. ALLEN, Jr.,<sup>00</sup>, July 6.  
PERCIVAL C. CLOW<sup>00</sup>, April 16.  
WILLIAM L. STEVENS<sup>00</sup>, October 13.  
WALTER PUTNAM<sup>02</sup>, November 14.\*  
MRS. JOHN C. LEE<sup>03</sup>, December, 1951.  
WILLIAM W. CRONIN<sup>04</sup>, March 26, 1952.  
H. DOUGLAS EATON<sup>06</sup>, May 24.\*  
ROBERT D. JANVYN<sup>06</sup>, August 15.\*  
ARTHUR C. KIRBY<sup>06</sup>, February 12, 1952.  
WILLISTON C. RICH<sup>06</sup>, July 16.\*  
CORNELIUS S. FLEMING<sup>07</sup>, December 6, 1951.  
G. TEMPLE BRIDGMAN<sup>08</sup>, November 25.  
WILFRED A. MORRIS<sup>08</sup>, date unknown.  
CARL W. GRAM<sup>09</sup>, December 30.  
ARMIN F. HEROLD<sup>09</sup>, January 5.  
CLARENCE REEDS<sup>09</sup>, November 8.\*  
PAUL G. W. ANDERSON<sup>10</sup>, July, 1952.\*  
REGINALD D. JOHNSON<sup>10</sup>, October 28.\*  
AUGUSTIN FRIGON<sup>11</sup>, July 9.\*  
OTTO C. F. MEISEL<sup>11</sup>, December 27.  
JOHN L. BRAY<sup>12</sup>, December 7.\*  
ARTHUR H. MORTON<sup>15</sup>, July 15.  
E. EUGENE PLACE<sup>15</sup>, December 4.  
ERNEST J. WEAVER<sup>15</sup>, November 8.  
CHARLES W. COLBY<sup>17</sup>, November 20.  
JOSEPH DE L. MC MANUS<sup>17</sup>, December 12.\*  
WILLIAM E. THRASHER<sup>17</sup>, October 29.  
WILLIAM A. FELSING<sup>18</sup>, October 5.\*  
CARL L. WHITEMORE<sup>19</sup>, October 11.\*  
JOSEPH H. CARR<sup>21</sup>, September 8.  
JAMES B. HELME<sup>22</sup>, August 27.  
RODNEY C. RANKIN<sup>23</sup>, November 11.\*  
JOHN S. FARNSWORTH<sup>24</sup>, October 26.\*  
MARY E. PROCTOR<sup>24</sup>, April 27.  
ROBERT MORGAN<sup>25</sup>, date unknown.  
ALEXIS A. BERESTNEFF<sup>30</sup>, November 29.  
HARVEY G. SCHWARZ<sup>33</sup>, date unknown.  
SAM F. WARREN<sup>47</sup>, May 3.

\* Mentioned in class notes.

# News FROM THE Clubs AND Classes

## CLUB NOTES

### *M.I.T. Club of Hartford*

The Club held its first meeting of the year November 19, 1952, at the Hartford Club. Twenty-eight members were present, and after dinner and a short business meeting, we were entertained by two visitors from M.I.T., Donald P. Severance'38 and Gordon S. Brown'31. President Horace B. Van Dorn'37 introduced Marshall McGuire'42, our new Vice-president.

A few days prior to the November meeting, President Van Dorn entertained Walter A. Backofen, 2-46, Assistant Professor of Metallurgy. The latter was visiting the Hartford area in connection with a survey of placement opportunities in local industry.

All Alumni in the Hartford area are urged to return to the Secretary their directory information cards. In an effort to economize, we are eliminating from our rolls the names of all Alumni except those actually residing in this territory and wishing to continue an active interest in the Club.

The tentative program for the balance of the 1952-1953 year is as follows: February 18 - Thomas F. Malone, 2-46, Associate Professor of Meteorology, to speak at a Ladies' Night meeting on the subject of climatology; April meeting - field trip to Bradley Field to cover the new Hamilton Standard plant, the new Bradley Field Terminal, and the Kaman plant; May meeting - annual banquet and outing. - CHARLES P. BRITTON'33, *Secretary*, 15 Lewis Street, Hartford, Conn.

### *M.I.T. Club of the Kanawha Valley*

On December 2, 1952, the officers of the Club, the local Honorary Secretary, and the three Educational Counselors were hosts at a dinner for four representatives of various Charleston high school administrations and for M. E. Shank'49, Assistant Professor of Mechanical Engineering at M.I.T. The dinner, at Lucien's Restaurant, was designed as an informal opportunity to exchange ideas on career guidance in the high schools. Following the meal, Professor Shank described the philosophy behind his visits to schools and also told of M.I.T.'s success in strengthening its school of humanities. Assistant Superintendent Thomas R. Horner, Kanawha County Board of Education, outlined some of the problems existing in regard to the interest - or lack of it - of high school students in scientific or engineering careers. An interesting discussion soon evolved from the ideas promulgated.

Hosts at the dinner were the following M.I.T. Alumni from the Charleston area: President Stuart J. Bugbee'27, Vice-pres-

ident William L. Hawes'22, Past President Radcliffe G. Edmonds'34, Board Member Ralph L. Kelly'42, Honorary Secretary Rolf V. Wallin'32, Educational Counselors Charles C. Neas'47 and Benjamin T. Woodruff'36, and Secretary-Treasurer D. G. Hulett'42. Kelly had been in charge of arrangements for the dinner.

At about 8:30 P.M. the same evening, the club officers escorted Professor Shank to a full-fledged meeting of the Club in the spacious apartment of John D. Ryan'51. There, 16 members of the local group participated in the same sort of discussion that had been started at the dinner. Refreshments were supplied by Jean P. Leinroth, Jr.'48. In addition to most of those previously mentioned, the following additional Alumni attended: Donn W. Barber'42, Roy M. Crawford'34, Charles H. Gilmour'31, Alexander S. Giltman'47, Richard Gorman, Jr.'33, Joseph C. Jeffers'40, Max F. Means'45, and Rush Taggart'49. - DANIEL G. HULETT'42, *Secretary-Treasurer*, 513 Maefair Drive, Forest Hills, Charleston 4, W.Va.

### *M.I.T. Club of Western Maine*

The Club held a most successful meeting at the Columbia Hotel, Portland, Maine, on November 7, 1952. Forty-seven members and their guests attended. A nominating committee was appointed to present a slate of officers for election at the next meeting. So enthusiastic were the members that it was decided to hold another meeting in the spring.

Professor John B. Wilbur'26 prepared a most interesting talk which was greatly enjoyed. - EDWARD J. NORRIS'31 *Acting Secretary*, 14 June Street, Portland, Maine.

### *M.I.T. Club of Milwaukee*

Professor Chalmers, Associate Director of Admissions and Adviser for Foreign Students, spoke to the Club at a dinner meeting at the University Club on November 26. Our guests at this meeting were 17 high school principals or student counselors representing most of the high schools or preparatory schools in the Milwaukee area. The following members were present: John B. Ballard'35, Roland H. Becker'23, Michael F. Biancardi'40, William R. Bohlman'49, Frank E. Briber, Jr.'43, Phillip B. Craighead'18, Philip N. Cristall'17, Frederick R. Gruner'41, Arthur G. Hall'25, Frank E. Hamilton'07, Curt E. Hoerig'38, Kenneth L. Holmes'51, Charles W. Jackson'49, W. Oliver Kincannon, Jr.'50, Harold E. Kock'22, Chester E. Meyer, Jr.'36, John C. Monday'51, George W. Pollock'21, Dr. Lemuel D. Smith'06, Charles L. Sollenberger, 10-44, Robert Tetus, Emerson J. Van Patten'24, Andrew Wessel'52.

Professor Chalmers proved to be an engaging and entertaining speaker as he told the problems of the admissions officer and related news concerning latest developments at the Institute. - CHARLES L. SOL-

LENBERGER, 10-44, *Secretary*, Process Laboratory, Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

### *M.I.T. Club of New York*

Our Silver Stein Dinner, held December 3 at the Waldorf-Astoria, will long be remembered by the 200 Alumni attending. Senator T. C. Desmond'09, this year's recipient of the Silver Stein, maintained the high traditions of this award in his acceptance speech. The committee responsible for his selection had a difficult time in wording his contribution to our Club over the years. We all say thank you again for the leadership and inspiration Tom Desmond has given us all these years. Lester Gardner'98, last year's recipient, was there to wish him continued health and success.

Dr. Killian brought us up to date on school activities. It is always amazing to us to hear of the diversified activities that Cambridge is pursuing. George Dandrow'22 was at his personable best as toastmaster. We had many distinguished visitors from Cambridge with us, and last but not least, of course - Lobby. We want to thank Bernie Nelson'35, chairman, El Koontz'36, John Plantinga, 6-45, and Dave Jealous, 2-44, for a job well done.

February 25 has been selected as the day for a look into the future. Socks Kinsey'24 has lined up an impressive group of staff people who will forecast advancements in various scientific fields. "A Day in the Future" will be held in afternoon and evening sessions at the New York Museum of Natural History. Professor John G. Trump'33 will report on contributions to medical research and its effects on our future health. Professor Shrock will cover the "Magic of Minerals." This would indicate our possibilities and limitations on the natural resources of the country. Dean Belluschi will forecast the architectural trends of the future. C. Stark Draper'26 will discuss the latest developments on instrumentation and aeronautical designs. The evening will be concluded with remarks from Dr. Compton on the effects of recently concluded scientific research and its effects on the years to come.

All Alumni are invited to attend the afternoon and evening sessions. For further information or reservations, write the Club. - RALPH C. WILTS'41, *Secretary*, American Blower Corporation, 50 West 40th Street, New York 18, N.Y.

### *M.I.T. Club of Puget Sound*

The Club held a December meeting in the Seattle Yacht Club on December 10, 1952. Forty-four Alumni were present. We were honored with the presence of Bruce Kingsbury, 2-44, Assistant Director of Admissions, M.I.T., and a visitor, Captain Don Floyd'48 of WADC, Dayton, Ohio. Mr. Kingsbury discussed the problems, and direction of solutions of these problems, as now seen by the Admissions Office. He also made a brief progress report



on the physical status of the M.I.T. plant and its people. Horace McCurdy'22 described his recent visit to an alumni meeting in New York City. President Killian, who made a talk at the new York meeting, announced to Mr. McCurdy his intentions to visit Seattle in March. This news was greeted with great enthusiasm and a committee will shortly be established to make arrangements for President Killian's visit. W. W. Kellogg'42, presently employed by the Boeing Airplane Company, in preliminary design studies, presented his thoughts on engineering the moon rocket. Official British movies of V-2 rocket firings were shown. Any local Seattle Alumni who failed to receive notice of this meeting are urged to contact J. W. Barton, 4038 Hunts Point Road, Bellevue, Wash., to ensure notice of future meetings. — JAMES W. BARTON'39, *Secretary*, 4038 Hunts Point Road, Bellevue, Wash.

### **M.I.T. Club of Venezuela**

The Club was honored by a most enjoyable visit of H. E. Lobdell'17, Executive Vice-president of the M.I.T. Alumni Association, fondly remembered by many of us from our student days when we used to visit the Dean's Office.

Lobby arrived on the evening of November 16. The next morning he was taken around part of the city by Guillermo Machado Mendoza, 2-46, and in the afternoon Whitney Ashbridge'26 guided him around the new eastern part of town, and showed him some of the construction work which had been under the direction of M.I.T. men. On the evening of November 17, the Machado Mendozas gave a cocktail party in honor of Mr. Lobdell, which was attended by many of the local M.I.T. Alumni and their wives and which was voted a huge success by all who attended.

On November 18, Enrique Jose de Majo'45 and Whitney Ashbridge took Lobby on a tour of the new Autopista, or super-highway, which is being constructed between the seaport of La Guaira and Caracas. After seeing the Autopista, the group visited the wharves, breakwaters, and large modern passenger terminal of the recently completed port of La Guaira.

That night the Club had a dinner at the Valle Arriba Golf Club, attended by the following: Victor Manuel Lopez'36, Antonio J. Carbonell, 2-44, Mariano Jesus Contreras'28, Felipe Echaniz'43, Nestor Eduardo Perez, 2-46, Guillermo Machado Mendoza, 2-46, Enrique Jose de Majo'45, Hector Rodriguez-Torres'45, Whitney Ashbridge'26, Hugo Perez La Salvia'45, Edmunds Curiel (Harvard alumnus), Gerald O'Connor'29, Gabriel Disario'28, Arthur B. Morrill'09, Oscar A. Machado, Jr., '43, and Atahualpa Dominguez, 2-46 — together with wives of most of the above men, and, of course, our guest of honor, H. E. Lobdell'17. The dinner was held on the porch of the club which has a magnificent view, with the lights of the city below; the food was excellent; and everyone had a fine time.

Activities for the 19th included a look at some of the water supply installations of Caracas, and that evening the Ashbridges had a barbecue on the terrace of their house in Valle Arriba. About 24 people were present and while some sat on the

terrace and looked at the view, others played "bolas" on the lawn and a small group gathered around the piano with maracas to play and sing Venezuelan and other Latin American songs.

The Club hopes that Lobby enjoyed his visit as much as it enjoyed having him. His brief stay gave an opportunity to have several get-togethers of the congenial alumni group in Venezuela, and it is hoped that his next visit to the country will not be too far off. — FELIPE ECHANIZ'43, *Secretary*, Edificio Belvedere, Apt. 1, Ave. Washington, San Bernardino, Caracas, Venezuela.

### **Washington Society of M.I.T.**

The Society's second meeting of the season consisted of its annual social meeting (stag) held on December 11, 1952, at the old Georgetown Hospitality Hall of the Christian Heurich Brewing Company.

An evening of informal sociability was enjoyed by approximately 140 attending members, from 5:30 P.M. to well after 9:00. Devoid of speakers, of auctions, and of movies, a warm renewal of old contacts and meeting with new Alumni lent to the successful affair amidst music (accordion, guitar, piano, and harmonica harmony) interspersed with a plentiful supply of cold cuts, cheese, baloney, ham and dressings, and free beer to everyone's capacity (the famous beer of the House of Heurich). Vice-president Nick Stathis'29 must have pulled the right strings to have convinced the House of Heurich to extend its hospitality to our M.I.T. Club at this holiday season, when so many other clubs and organizations are not able to get to first base with their requests. What does it take to swing it, Nick? Was it the M.I.T. Stein Song?

The next meeting is scheduled for February, 1953, after a rest period during January. — SAMUEL H. MANIAN'22, *Review Secretary*, 5707 26th Street North, Arlington, Va.

## **CLASS NOTES**

### **• 1891 •**

Two more of our class members have passed on to their reward: Edwin C. Smith in Providence and George H. Spooner in Maplewood, N.J. Both were very regular in our class gatherings until the last few years when the limitations of age and illness prevailed. The following article from the *Hampshire Gazette*, Northampton, Mass., gives a brief outline of Ed Smith's life: "Edwin C. Smith, 82, civic leader, died last night at his home. He had been president of the Blackstone Safety Council, a member of the Pawtucket Business Chamber, and recently had received a 50-year medal from St. Johns Lodge of Masons. He was a native of Elizabeth, N.J., attended Chauncey Hall School in Boston and was a member of the class of 1891 at the Massachusetts Institute of Technology. At the time of his death he was vice president and treasurer of the Wardwell Braiding Machine Co. of Central Falls, R.I." We have no further

information about Spooner, but will hope to report further in a later issue. Your Secretary still craves news from our members of '91. — FRANK W. HOWARD, *Secretary*, Bemis Associates, Inc., Post Office Box 147, Watertown 72, Mass.

### **• 1892 •**

The Secretary has no particular news to report but will take this occasion to extend to all the best wishes of the season and the hope that all of our classmates have a happy and prosperous new year.

Chick Kane reminds us that contributions to the M.I.T. Alumni Fund for the year 1952-1953 are in order and the Secretary hopes that as many '92 men as may be able will respond. Kane makes the encouraging report that contributions to date amount to \$83,231 against \$56,912 at this time last year. — CHARLES E. FULLER, *Secretary*, Box 144, Wellesley 81, Mass.

### **• 1894 •**

As these words are written before the end of the dying year, it may be permitted to wish a Happy New Year to classmates and all other Alumni who read these notes.

It is always a pleasure to hear, even indirectly, from Clive Davies. Having missed him in San Francisco on two occasions where he passed through the city en route to or from "The Islands," it is gratifying to report that he may now be addressed at The Old Vicarage, Hawkley, Liss, Hants, England. The recent notice from the Alumni Office recalls a most enjoyable visit to Hawkley Hurst in 1934 when Clive and his wife gave the Secretary and his wife and daughter a wonderful two days in this lovely part of England. It is hoped that Clive may include Cambridge in his next visit to the United States and Hawaii, and a '94 party would be arranged for him. Just give us a chance, T.C.

Jim Kimberly has made his migration to Tryon, N.C. (Box 1175). It was recently announced that his son, Jack ('26) had been advanced to a high position in the Kimberly-Clark Company, and young Jim ('34) is also active in the management of the big concern at Neenah, Wis. Another flitter is Walter V. Brown, who has departed from Belfast, Maine, to his winter home — 135 East Amelia Avenue, Orlando, Fla. The Secretary would appreciate a call when next Brown takes his northern flight.

An early Christmas card from the Austin Sperrys reports that Mrs. Sperry has partially recovered from her mishap of last February when she fell and broke her hip. She is now limited in locomotion but can walk with the use of two canes. As this accident occurred at a parting luncheon just as the Secretary and his wife were about to start east from Berkeley, we have felt an especially deep personal interest, and almost a sense of responsibility, for this unfortunate occurrence. We hope further improvement will be speedy.

Another Californian, the well-known architect, W. L. Woollett, sends his address as Apartment 2, 2075 North Vermont Street, Los Angeles. The Secretary will certainly renew acquaintance when and if he visits California again, for his last contact, after a lapse of 57 years, was most enjoyable.

Charles Abbot continues to add to his long list of researches. A recent card gave his home address as Bethesda, Md., but the Smithsonian Institution is his scientific address. Charles plays golf weekly and has devised a new putter which he claims has added much to his skill on the greens. Congratulations!

It is with regret that a saddening note must be added. News has been received of the death more than five years ago of William Reed-Hill, one of our classmates in Architecture. Originally of '93, Reed-Hill has never responded to class notices and probably regarded himself of the previous class. He last lived in New York City.

The Akron *Beacon Journal* of December 10 carried a picture of George Sherman and the following note relative to his reaching the age of fourscore: "George W. Sherman, one of Akron's best known business figures, will celebrate his 80th birthday tonight with a dinner party at the home of his son, Philip, 294 Sundale Ave.

"Sherman, who operates a second-hand machinery business at 114 Anaconda Ave., formerly headed the Akron Industrial Salvage Company for 31 years.

"Born in Fall River, Mass., Sherman was in business for himself for three years in Boston as a consulting engineer. He came to Akron in 1901 with the Diamond Rubber Co. and for a year was in Liverpool, England, as superintendent of the Northwestern Rubber Co.

"Sherman returned to Akron and remained with Diamond and later B. F. Goodrich Co. for 18 years as mechanical engineer. He is a former president of both the library and school boards and is active in First Congregational Church where he has served as president of the deacons' board. Sherman's wife died four years ago. He has three other children besides Philip, and 10 grandchildren. Sherman makes his home at 75 Edgerton rd."

The Secretary is pleased to state that, after three years of work, his history of M.I.T., up to the move to Cambridge, has been put into the hands of The Technology Press. No date of publication has been announced; for the long period of printing, proofreading, and so on, is yet to come. But in the words of the immortal Dr. Bunyan, "There is hope."

The Secretary will soon move his office to Room 317 in the new Dorrance Building, given to M.I.T. for the Departments of Biology and Food Technology and which will be dedicated in the early summer. — SAMUEL C. PRESCOTT, *Secretary*, Room 5-213, M.I.T., Cambridge 39, Mass.

## • 1895 •

The membership rank of our Class has been broken again by the passing of Edwin C. Alden, Course VI, and Hunsdon Cary, also of Course VI. Eddie Alden passed away November 26, 1952, at the Pinehurst, N.C., Convalescent Home where he was taken after a sudden mental and physical collapse from hardening of the arteries. He was born in Cincinnati, Ohio, April, 1873, where he was finally buried. His early education covered two years at Stephens Preparatory School, Hoboken, N.J., during 1884-1886. Returning to Cincinnati, he graduated from the

Woodward High School in 1890. After attending St. John's Military Academy in New York State in 1891, he entered Tech. Following graduation he was inspector for the American Telephone and Telegraph Company until 1910, serving in the Pittsburgh district, caring for installation and maintenance equipment. In 1907, he transferred to New York City in the office of general superintendent of traffic. In 1910, he entered the real-estate business in New York City and later was appointed registrar of records of the Tenement House Department of New York City. The year 1916 found him with Lord and Taylor of New York, in the capacity of auditor of systems; in 1918 he transferred to the Niles-Bement-Pond Company of New York and was assigned to their Pratt and Whitney Plant at Hartford, Conn. During World War I he was captain of the home defense unit, New York City; State Training Command for the employees of the Pratt and Whitney Company; and instructor at Governor's Island, 69th Regiment, Armory.

In 1925 he joined the States Company of Hartford, where he advanced to factory manager, controller, president, and chairman of the Board of Directors, resigning in 1949. He moved to New London, Conn., spending winter in Florida and summering at his lodge at Rogers Lake, Old Lyme, Conn. He always was an enthusiastic M.I.T. man, never missing a class reunion or a Technology event. He was president of the Technology Club of Hartford in 1926. He leaves his widow, Minnie Wood Hooper Alden; her daughter, Mrs. Clarence L. von Tacky; a sister; and three grandchildren.

Hunsdon Cary, Course VI, was born April, 1872, and passed away September 17, 1952, at his home, 815 Spottswood Road, Richmond, Va. He was with our Class during 1892-1893, and after leaving Tech he studied law in his father's office and at the University of Virginia, 1894-1896. He was a graduate of the Virginia Military Institute and a member of the State Bar Association, as well as of the American Bar Association; and a member of the Phi Delta Phi Fraternity. He practiced law continually in Richmond, where he spent his entire life. During the Spanish War, he organized a troop of cavalry which was not mustered into service. He was major of the First Battalion, First Virginia Infantry, from which he resigned in 1910. He apparently started in politics in 1906-1908, as a member of the Richmond City Council. He evidently succeeded in mastering the complex steps in politics as he acquired the honorable title of senator in 1951. We saw little of him during our various reunions, but we are glad to quote from our records: "My pleasant recollections of Tech are the warm friendships which I formed, but which it has been impossible for me to follow up in after years." — LUTHER K. YODER, *Secretary*, 69 Pleasant Street, Ayer, Mass.

## • 1896 •

Christmas and New Year will have come and gone by the time these notes are published, but we wish all '96 classmates and their families a bright and constructive New Year.

John Tilley continues to report "all well on the New York front," except for the gangster outrages. Locally we can report the usual increasing dignity becoming our years, and an excellent health record. Victor Shaw had his 80th birthday on December 12. Following is a letter received from him after your Secretary's 80th birthday in May:

"Sandberg Rancho, Lake Hughes, Calif., April 23, 1952. Here's many happy returns of your 80th birthday, and it gives me rather a shock in recalling that in seven months, on December 12, I'll also become an octogenarian myself. Nevertheless, I can't wish you anything better, really, than that you are as healthy and full of the old zip as I am right now, being sound in limb if not wind, and still having plans for the future of 20 more years — I hope.

"Looking back to the good old times, when you and I were on the same varsity and class track teams, it really proves to me that our days on this old ball of dirt sure 'are as grass,' and the wind blows and it's gone. So very short a time in which to do something, get somewhere, be something maybe. Alas, when I take a peek at my record! Then compare it with yours, and most of our classmates. Old Tempus sure fugited too fast for me. All I can claim is the title, F.A.G.S.

"Charlie Locke used to try to console me, peace to his ashes, by saying other '96ers all rather envied me in my rambling all over this continent. But I doubted it, although, as Charlie pointed out, I've done about what I wanted to. But a glance at your life's ledger and then at mine serves only to make me wish I'd stayed put and accomplished something that is real — a *raison d'être*.

"Anyway, I've a wish for you et moi même, that I can again send you my sincerest good wishes for another mighty happy birthday for May 4, 1962; and that we'll both be as hale and hearty as of now. May the years sit lightly on your shoulders, John, till the old gent with a scythe takes a swing at us both."

Abby Young sends her greetings to the Secretaries and Class in general. She is making the most of a lonely future and sounds brave and courageous.

We regret to report the death of a fellow classmate, Robert S. Wason. A clipping taken from the Boston *Globe* gives the following information: "Robert S. Wason, 81, former head of Wason & Co., Boston wholesale grocers and importers, which was liquidated about eight years ago, died yesterday [November 8] at New England Deaconess Hospital. A resident of 27 Osborne Road, Brookline, Mr. Wason was born in New Boston, N.H., and graduated from M.I.T. in 1896. The morning after his graduation he joined Wason & Co., in operation for more than 100 years. Mr. Wason maintained an office on State St., Boston.

"Mr. Wason was a golf enthusiast and a world traveler. He leaves a wife, the former Lillian Basil. He was the brother of the late Edward H. Wason, a Congressman from New Hampshire, who died in 1941, and George B. Wason, prominent in Boston banking circles before his death about six years ago." The sympathy of the



Class are extended to the Wason family — JOHN A. ROCKWELL, *Secretary*, 24 Garden Street, Cambridge 38, Mass. FREDERICK W. DAMON, *Assistant Secretary*, Hotel Commander, Garden Street, Cambridge, Mass.

## • 1898 •

The following article appeared in the *Chicago Tribune* of October 13, 1952, concerning our classmate, Robert De Golyer:

"Services Today for Architect R. S. De Golyer — Services for Robert Seely De Golyer, 76, nationally known architect, will be held at 4 p.m. today in the First Methodist Church Chapel, Evanston. He died Saturday in his home at 125 Kedzie St. in the suburb. Mr. De Golyer designed many Chicago apartment buildings, the Ambassador East Hotel, and the Julia Lathrop Federal Housing Project. He was assistant architect of the Pentagon building in Washington and served as captain in the construction division of the army in World War I. In 1941, he aided the army quartermaster corps and in 1943 was associated with the defense plant corporation. Mr. De Golyer attended Evanston public schools, Yale University, and . . . Technology. He was a fellow of the American Institute of Architects. He began practice in Chicago in 1899 and several years later founded the firm of Robert S. De Golyer and Company. Surviving are his widow, Eleanor, and a brother, Donald."

Our president, D. W. Edgerly, in response to his recent letter to the Class, received a letter from Mrs. Howard Constable, 42 Princeton Ave., Princeton, N.J., advising of the passing of her sister, Mrs. Julia Ellsworth Blau. We are glad to include in the class notes the following interesting material, which Mrs. Constable was good enough to send. From the *Princeton Packet*, of October 27, 1949, the following:

"Mrs. Julia Ellsworth Blau, widow of Max F. Blau, a member of the Princeton University faculty for 20 years, died late Saturday night in the Princeton Hospital after a short illness. She was 77 years old. One of Princeton's oldest residents, Mrs. Blau was born in Waterloo, Iowa. She taught at Miss Fine's School for nearly two decades and acted as a tutor for students ranging from the lower elementary grades to the senior year in college. Her husband, who died 26 years ago, was considered one of the foremost German scholars of his time. He held a professorship at Princeton in German languages and literature. Mrs. Blau was graduated from Mount Holyoke College and did graduate work at . . . Technology. Before coming to Princeton 43 years ago she worked at the famous Woods Hole, Mass., Biological Laboratory and taught in Braintree, Mass. She is survived by a sister, Mrs. Howard Constable of 42 Princeton Avenue and a brother, Alfred J. Ellsworth of Milton, Mass."

From the *Princeton Herald* of November 2, 1949: "Miss Fine's School Honors Former Teacher — The chairman of the Board of Trustees of Miss Fine's School, Mrs. George W. Elderkin, issued the following comment this week on the contributions of Mrs. Max Friedrich Blau, a

former teacher at the School, who died on October 22nd, 1949: 'Mrs. Max Friedrich Blau was a member of the faculty of Miss Fine's School a quarter of a century ago, but so lasting and pervasive was her influence that it seemed as if she had been with us always. Fruitful teaching calls for a relationship not between the teacher and the class, as a group, but between the teacher and the individual pupil. Mrs. Blau realized this, preached it and practiced it, varying her method and approach with the temperament and capacity of each pupil. It was this ability to evoke the best in the individual, combined with her mastery of so many fields of learning, that made her career as a tutor of all ages of students as successful as her career as a school teacher.'

Among the material was a particularly impressive prayer by Dean Wicks, concerning which Mrs. Constable writes: "At the request of so many friends who heard former Dean Robert Wicks's prayer at the Memorial Service in the Princeton University Chapel, I had it printed and enclose a copy. If you know of anyone who would like a copy, I should be glad to send one." We thank Mrs. Constable for her kind consideration and courtesy.

Turning from our generation to the next younger, through the courtesy of the Alumni Office we have the following interesting clipping from the *Boston Globe* of August 7, 1952, concerning Isabelle French, daughter of our classmate, Abram French: "Top Trouble Shooter Job Held by Swampscott Girl — Isabelle French of Swampscott and Margaret Ross of Commonwealth Ave., Back Bay, are but two of 11 young women doing engineering work at the new Woburn electronics division plant of Sylvania Electric Products, Inc. They are typical, however, young women who know they have engineering talent and are out to prove women need not fear male competition in modern industry. Miss French's father, Abram French, a general contractor, studied civil engineering, graduated from . . . Technology in 1893, and no doubt had some influence on her yearning to be an engineer. 'I was never discouraged by anyone — at home, at school or in business,' is Isabelle's encouraging comment to girls who fear bars will be raised to their entrance into the engineering field. 'I took apart bicycles when I was 4. I always wanted to see what made things work, liked to work with my hands,' she adds. She received her Bachelor of Science degree in radio engineering at Tri-State College in Indiana, where, she recalls 'about one girl among a thousand boys got an engineering degree.' She's been with Sylvania eight years now, and loves to see the amazed expressions on the faces of men as she talks about germanium diodes, thyristors, etc. The Swampscott girl has had more than eight years' experience with radar tubes, has done considerable work measurably responsible for design and development of items vital to our armed services. She's one of Sylvania's experienced 'trouble shooters,' and her constructive suggestions are given complete consideration. She's not only a member of the Institute of Radio Engineers, and the Society of Women Engineers, but is asso-

ciate member of the American Institute of Electrical Engineers. 'I believe in a person doing what they want. A girl today needs to be a bit thick-skinned, not oversensitive or easily discouraged, definite aptitude for engineering work and a creative bent. Then she can't be stopped in her chosen field.' Girls like Miss French and others in the plant draw this comment from James J. Sutherland, general manager of Sylvania's electronics division: 'Women have proved their capabilities in this field more and more. I'm glad to get a capable woman engineer, any time.'

Above the article is a picture of the two young ladies with captions above and below: above, "Women with Slide Rules," and below, "Strobotron Testing — Isabelle French (left) and Margaret Ross." The girls seem to be very happy, working and smiling at a very complicated bit of apparatus. Congratulations, Mr. and Mrs. Abram French, and, congratulations, Isabelle!

Bob Lacy's long drive of 362 miles in one day has evoked the following from our prophet, Jack Bleeker, and we quote in part from a letter to Dan Edgerly: "Regarding the 'longest ever' drive of 362 miles by Robert Lacy — maybe he is right. The 565 miles I wrote you about I did not drive all myself. Mrs. Bleeker was with me and she drove 249 miles while I drove only 316 of the total of 565 from Ann Arbor, Mich., to West Chester, Pa., leaving Ann Arbor at 9:55 A.M. on July 30, 1952, and arriving in West Chester at 1:30 A.M. on July 31. It was a 'continuous' trip except for stops for meals and gas, but I did not drive it all myself. If you think it would be of interest to have a competition in distance driving for '98 men for comment in *The Review*, I believe I can best Lacy's 362 miles without any help from Mrs. Bleeker or others, but I will not start anything unless you think it worth while."

There seems to be plenty of kick in the old generation. Perhaps, Bob and Jack, you have started something. Who else among the boys and girls of '98 can tell us of longer or equidistant drives, or of any interesting trip? The hats are in the ring, or should I say the feet are on the throttle.

Remember the 55th!

Any member or friend of the Class who can furnish the present address of Joseph C. Noyes, kindly advise the President, D. W. Edgerly, and the Secretary. Letters sent to 88 Park Street, Portland, our latest address, are returned unclaimed. Thanks for co-operation and remember the 55th. — EDWARD S. CHAPIN, *Secretary*, 463 Commercial Street, Boston 13, Mass. ELLIOTT R. BARKER, *Assistant Secretary*, 20 Lombard Road, Arlington, Mass.

## • 1899 •

Just as *The Review's* deadline is at hand comes the sad news of the death of Ralph Loud of Arlington, Mass., on Sunday, December 14, from a cerebral hemorrhage. Ralph had a major operation several years ago and was unable to be present at the 50th class reunion in 1949 as he had planned; but after the reunion was over, a delegation went out to his house to see him, and he frequently since then expressed his appreciation. Your Secretary expects to present details of Ralph's

professional career in a subsequent issue of *The Review*.

Henry Philip James, II and VI, who lived in Wausau, Wis., until his wife died in 1951, is now living with his sister at 115 Beechwood Road, Summit, N.J., and will be glad to hear from any of his old classmates. He was one of two men in the Class [Lawrence Addicks] who took two courses simultaneously. Last year he completed a six-month tour of Europe, visiting France, England, Ireland, Scotland, Norway, Sweden, Denmark, Holland, Belgium, Luxembourg, Switzerland, Germany, Austria, and Italy. Quite a trip for a young man of 78! — BURT R. RICKARDS, *Secretary*, 381 State Street, Albany 10, N. Y. MILES S. RICHMOND, *Assistant Secretary*, 201 Devonshire Street, Boston 10, Mass.

## • 1902 •

Through a letter from Albert Lombard of Pasadena, Calif., I have learned of the death of his friend and fellow classmate, Walter Putnam, on November 14, 1952. Lombard enclosed a clipping from the Pasadena *Star-News* which gives an account of Putnam's activities in public life. It seems that he had been engaged in private practice as a structural engineer in that city since 1910, and had become so well recognized in his profession that in 1926, when the city decided to reorganize its Building Department, it chose him as its chief engineer. He continued in that capacity until his retirement in 1948.

During this time he rigidly enforced the building code, of which he had been a co-author, and at times brought down upon himself the censure of the real-estate men and city officials. Especially was this the case when he condemned buildings which had been weakened by the inroads of termites, whose dangerous activities he was one of the first to recognize. He later headed a committee set up by the University of California to make a state-wide study of the termite problem.

One of his first big engineering jobs as head of the board was to enlarge the Rose Bowl. He added 18,000 seats in 1927 and constructed the south end, thus completing the "bowl" shape. Putnam was naturally interested in earthquake-resistant construction, but more so after he was "loaned" to Long Beach in 1933 after its earthquake disaster. Upon his return to his home job, he drafted an earthquake code, or ordinance, to guide cities in sound construction to resist earthquakes, and about a year later applied it to his own Pasadena. This brought about the condemnation of several public schools which, in turn, brought criticism. This quieted down as many instances of poor construction were revealed when the buildings were torn down.

Although he often incurred public criticism by his insistence on strict enforcement of the building code and good engineering practices, he was lauded upon his retirement as "a public official of great ability and of great personal integrity." A more personal touch is in an editorial at the time of his death, which states: "He was a public official with emphatic professional integrity and honesty and he was, withal, a delightful friend."

Putnam saw military service in both the

Spanish War and the World War I. In the Spanish War, he served in the Cavalry and in World War I was a captain in the Coast Artillery. He is survived by his widow, the former Katherine Scobey, a daughter, Mrs. John Carrington of San Marino, and three grandchildren, John Putnam, David, and Judith Carrington.

Bert Haskell made a trip to Las Vegas, Nev., last summer to visit his son who is engaged in chemical work there. While there, he made certain to see Charles McCarthy and has sent in these notes: "I have just returned from a visit with my son, Albert (M.I.T. '37) in Las Vegas, Nev. While there I looked up Charles McCarthy, now a retired colonel, U.S.A., but nevertheless about the busiest retired man I have ever seen, working with various civic organizations. For the benefit of any other '02 men who may pass through or hesitate in Las Vegas, I advise them to look up our friend Charlie without fail as he is almost a first settler and knows the town inside and out.

"My wife and I with six other guests were royally entertained by Charlie and Mrs. McCarthy at a dinner party at the Thunderbird Hotel, and my son and I were taken to a Kiwanis luncheon. During my 10 days stay, we met several times, and he was greatly interested in my report of the 50th reunion. I had brought him a picture of the reunion group, and after a comparison with his class book pictures he decided that, except for looking a little more mature, the boys had not changed too much! Altogether I had a most enjoyable time with the Macs and can heartily recommend a trip to Las Vegas with a call on them."

The fall and winter migrations are on at the time of these notes, the middle of December. Walton Sears has forsaken Bethel, Maine, for the comforts of Arlington; Arthur Hall and wife are back in Boston for the winter, and Arthur and I occasionally lunch together; Charles Porter has returned to Tamworth, N.H., after several months in Milton, Mass.; and some are preparing for sojourns in Florida. — BURTON G. PHILBRICK, *Secretary*, 246 Stuart Street, Boston 16, Mass.

## • 1903 •

After some months delay due to illnesses of your Assistant Secretary and the Assistant Secretary's wife, plans are again in process for our 50th reunion. Carlton Green has agreed to act as reunion chairman, and he and Eustis have had their first conference (as of this writing, December 13) toward getting the plans in shape to present to you for approval. A letter will go out to all members of the Class, and you will probably have already had it when you see these notes. It is earnestly desired that every member express his opinion about all the features of the plan as outlined, and let us know your thoughts about it as soon as possible. If you haven't yet done this, do it now. The idea of spending one or more nights on the M.I.T. campus in dormitories is a new one, and should appeal to us who never had any dormitories. We hope you like the idea, but let us know. There seems to be no news of any member of the Class since the last issue. This is too bad. I have always

hoped and looked for at least one letter a month from someone who has not been heard from. I keep a scrapbook of clippings, pictures, and interesting letters, which has been running for the past 25 years, and I hope many of the Class will be interested in looking it over next June. Remember the dates, June 12-15. — FREDERIC A. EUSTIS, *Secretary*, 131 State Street, Boston, Mass. JAMES A. CUSHMAN, *Assistant Secretary*, Box 103, South Wellfleet, Mass.

## • 1906 •

In the January notes, reference was made to the 50th anniversary celebration of the founding of Beta Chapter of Theta Chi Fraternity of which the Secretary was one of the charter members. The Golden Anniversary dinner was held at the Hotel Shelton in Boston on December 13, and there were two classmates present besides the writer. They were P. J. Kennedy, Jr., and P. V. Perkins. Mrs. Kennedy was also present. As noted in the January Review, Kennedy is a consulting engineer in Holyoke, Mass., and resides in Smith's Ferry, Mass. His son is in business with him. P. V. Perkins was at the Institute but one year. He was the man from Alpha Chapter at Norwich University who founded Beta Chapter at Tech. He is on the class list as now living at 2413 Lambert Drive, Toledo, Ohio. After leaving M.I.T., he went west and lived in California for a time. He has lived in Toledo for at least 10 years, and is in the investment business.

We have had occasion to refer to Mr. and Mrs. Chester A. Hoefer in these notes. The *Bulletin* of the Women's City Club of Boston for December contained the following notice in connection with their Sunday evening program of December 7: "The Long Journey of Mr. and Mrs. Chester A. Hoefer took nine months covering fourteen countries of Africa, Asia and Europe — and twenty means of transportation between the airplane and camel. Gondola, steamship, rickshaw, motorcycle, taxi and elephant all helped speed them on their way. Christmas Eve in Bethlehem, Easter in Rome, the sacred processions in Benares, India, the Taj Mahal by moonlight and sunrise over Mt. Everest — all adds up to a story too full for one short evening, but we will have a glimpse of it all on Sunday night." Slides were shown in connection with their talk. Unfortunately, the Secretary was unable to be present.

Notices have been received from the Alumni Office of the deaths of three more classmates as listed below: Henry Douglas Eaton, who died May 24, 1952. After leaving Technology, he was for three years in the banking business in Boston. In 1911 he graduated from the College of Physicians, Columbia; in 1911-1913, he was connected with the Presbyterian Hospital, New York, specialist in neurology. In 1913, he located in Stockbridge, Mass., but moved to Los Angeles in 1919 where he resided at the time of his death.

Robert D. Janvrin died August 15, 1952. He was apparently at the Institute but a short time, and lived in Revere, Mass., all his life.

Williston C. Rich passed away July 16, 1952. Rich was connected with Courses



VI and IX at the Institute. In 1915 he was with the Minneapolis Steel and Machinery Company of Minneapolis, Minn. At the time of his death, he resided at 1921 James Avenue, South Minneapolis. — JAMES W. KIDDER, *Secretary*, 215 Crosby Street, Arlington 74, Mass. EDWARD B. ROWE, *Assistant Secretary*, 11 Cushing Road, Wellesley Hills 82, Mass.

## • 1907 •

Unfortunately, my present supply of information regarding any of our classmates, which will provide me with material to use for these notes, is very small. In December, I received a letter from Jim Barker in which he comments in a humorous way about the notation which I had against his name in the list of our classmates which was sent to all of you during November, where I stated that he is "retired from business except as director of various corporations." He gives me quite a bit of information about many of his activities, but at his request I am not free to publish most of the facts contained in his letter.

I may say, however, that Jim is chairman of the board of Allstate Insurance Company, which is an automobile insurance company, wholly owned by Sears, Roebuck and Company. He also is a member of the Board of Directors of Sears, Roebuck and Company, Allis-Chalmers, Milwaukee Railroad, Harris Trust and Savings Bank, and the Universal Oil Products Company. You no doubt know that he is a life member of the Corporation of M.I.T., and he also is one of the trustees for various colleges, libraries, and museums. He closes his letter to me by remarking: "If that is retirement, make the most of it."

According to word received from the Alumni Office, Everett Rich, who was with us in the Course in Mechanical Engineering, now has a mail address: R.F.D., Essex Junction, Vermont. Early in December I received a letter from Ernest S. Altgelt, whose address is Route 8, Box 252, San Antonio 1, Texas, and who is a consulting civil engineer. He says that after a three-year drought in his section of the country, oats and rye are now coming up as a result of recent abundant rains. He is making an effort with the proper authorities in the various counties in Texas to get them to make appropriations to gather scientific information in the goat and sheep ranching area from Austin, Texas, to Del Rio in connection with the water supply for that region. He is hoping that he may be successful in his efforts where the memory of the recent drought, which caused dry wells, hauling of water in trucks, is fresh in the minds of the people, and that eventually structures may be designed to turn flood water into ground water. He says that since caverns are the great conveyors of water in the region, this proposition is both a mining and a hydraulic job of engineering. Ernest owns approximately 200 acres of land, 160 acres of which are in pasture, and he has a few head of cattle. — BRYANT NICHOLS, *Secretary*, 23 Leland Road, Whitinsville, Mass. PHILIP B. WALKER, *Assistant Secretary*, 18 Summit Street, Whitinsville, Mass.

## • 1909 •

We regret that no notes appeared in The Review for the past two months, but no items were received by the Review Secretary, although he attempted to solicit some from local members. This month, however, a few classmates came through. We received a letter from King Bullens, III, which was accompanied by one of those gloss colored postcards made direct from either Kodachrome or Ansco color, showing the entrance to "Homewood Gardens," which he and May have acquired. The entrance is a drive between two vine-covered brick posts with red azalea bushes in the foreground. The drive is lined with luxuriant trees and shrubbery. In the background there is a red brick mansion which resembles the governor's mansion at Williamsburg.

This is King's letter: "Some three years ago I sold my business, New England Auto Products Corporation, and later known as Neapco Products Corporation, to my executives with a substantial interest for my son, and retired. During the spring and summer of 1950, May and I did considerable traveling, including the South, the Caribbean, and Europe. Carl and Hazel Gram met us at the dock at Southampton, to our very great pleasure. A campaign to raise money for a new building for the Pottstown Hospital kept me more than busy during that fall and winter, with gratifying financial results. As a fitting climax for retirement enjoyment, we purchased, during our usual spring trip last year to Pinehurst, N.C., a winter home known as 'Homewood.' The central part is a replica of 'Westover,' and the wings are of 'Homewood' of Carroll of Carrollton fame. It is also noted for its azalea gardens. So between golf, gardening, and social pleasures we have a rather busy time.

"Our daughter is the wife of Allen H. Keally, Professor of Industrial Management, University of Tennessee, and head of the Department; they have two daughters, aged 10 and six. Our son, D. K. B., Jr., did his stint during World War II, went to Cornell and then to the University of Tennessee for industrial management. With his degree he also received his commission in the Air Force, spent a while in uniform, married Doris M. Forberg of Grand Rapids last January, and they now are living in Pottstown. A cordial invitation is extended to 1909 to stop in to see us here, or at Pottstown, Pa., for such of the summer as we spend there."

We hope that many of you may be able to accept King's invitation. His address is Box 688, Southern Pines, North Carolina. In any event, write to him and ask for one of those postcards.

The following letter was sent by Molly Scharff, II, to the Review Editor: "The important class news of the month for 1909, which will no doubt be reported more fully elsewhere, is the dinner of the M.I.T. Club of New York at the Waldorf-Astoria Hotel on Wednesday evening, December 3, at which the annual Silver Stein Award of the Club for outstanding service to the Institute and to the Club was made to our classmate, Tom Desmond, I. Tom and Alice were at the head

table to accept this well-deserved award. The Class was also represented on this occasion by Royce Gilbert, XI, Mex Weill, II, myself, and our respective wives; and although Harry Whitaker, VI, was unable to be present in person, he was one of the patrons of the dinner.

"Mex and Helen Weill told us about their travels in Spain and Portugal last summer from which Mex brought back a large collection of color photographs which he will be glad to show to any members of the Class who will call on him in Port Jervis, New York. Jeanne and I competed by telling about our travels last summer in Portugal, Greece, Switzerland, and France."

Congratulations to Tom. He surely deserves such recognition for all his services to the Institute.

We have just received a letter from Ray Temple, II, announcing the death of Clarence Reeds, II. Ray received the announcement from Clarence's wife, Mildred, with a note that the word be passed on to the Alumni Association. Ray goes on to say: "Bert Thornley and I knew Clarence Reeds very well as we all roomed on Rutland Square while we were at M.I.T. For the last 10 years or so, Clarence and I have swapped birthday and Christmas letters. Time marches on with us all. I have been with the Ruggles-Klingemann Manufacturing Company in Salem for 16 years, designing valves. Have a room during the week at the Salem Y.M.C.A. and get home to Reading for week ends. Best wishes to all."

The following appeared in an Oklahoma City newspaper and was sent by Mrs. Mildred Reeds: "Funeral services were conducted for Clarence Reeds, 68, prominent Cleveland County agricultural leader and member of a pioneer Norman, Okla., family. Reeds died Saturday afternoon, November 8, 1952, of a heart attack at the home of his brother, Claude Reeds, Newcastle. With his wife he had watched the Oklahoma University-Notre Dame game on television, then went out-of-doors saying he was going to get some air. Members of the family found him outside where he had collapsed shortly afterwards. A resident of the Wheatland community in northwestern Cleveland County, Reeds was recognized as one of the country's most progressive farmers. He was always interested in new agricultural developments and only recently was engaged with his wife in the introduction of a new feed crop. He was chairman of the Production and Marketing Administration's county committee at the time of his death, a post he had held for many years.

"Reeds also was active in the establishment of the Rural Electrification program in Cleveland County, serving continuously on the board of directors of the Oklahoma Electric Cooperative since its organization, in 1939. He served as chairman of the board and was also president of the statewide Electric Cooperative. In 1949 Reeds was awarded a plaque as the outstanding leader in the rural electric cooperative program in Oklahoma. John I. Taylor, president of the Oklahoma Farm Bureau in presenting the award, described Reeds as 'completely and unselfishly devoted to the welfare of others, a man whose sin-

cerity of purpose and splendid accomplishments have served as an inspiration to all who have been privileged to know and serve with him." Reeds was graduated from the University of Oklahoma in 1905 and later studied engineering at M.I.T. He served as consulting engineer in Hartford, Conn., for several years after completing his study at M.I.T., then returned to the southwest in the late 20's. He and Mrs. Reeds lived on a farm in western Texas, then moved to the family farm near Wheatland in 1929 and had lived there continuously since that time. Reeds' survivors include his wife, Mildred, and a son, Clarence Reeds, Jr., who with his wife also have a house on the family farm."

Those of us who knew Clarence at the Institute can well understand the well-deserved tribute of his being "completely and unselfishly devoted to the welfare of others." He was always that way. Clarence performed his thesis with Rudolph Riefkohl, II, who passed away on December 11, 1950, just two years ago. The Class extends its deepest sympathy to Mrs. Reeds. — CHESTER L. DAWES, *Review Secretary*, Pierce Hall, Harvard University, Cambridge 38, Mass. *Assistant Secretaries*: MAURICE R. SCHARFF, 366 Madison Avenue, New York 17, N.Y.; GEORGE E. WALLIS, 185 Main Street, Wenham, Mass.

## • 1910 •

It is with deep regret that I have to announce the death of two of our classmates. Paul Anderson passed away in July, 1952. He had lived in Southbridge, Mass., for many years. Reginald D. Johnson passed away October 28, 1952. He lived in California since he graduated and had a very fine architectural practice. He was honored by the American Institute of Architects for many of the buildings he designed.

During the past month I received a letter from Kearsley Harrison, who has apparently moved from Virginia to New York. He requested me to send him the addresses of classmates in New York City, which I shall do as soon as I find an opportunity. Al Huckins, who is now living in Rockport, Mass., writes that he has become active in civic and church affairs and finds himself as chairman of a finance committee trying to finance the remodeling of the sanctuary of the church.

I had a letter from Hal Lockett, who is now a representative for the H. H. Robertson Company in Chicago. He has been with this company since 1924. A letter from Karl Fernstrom informed me that he is now on his own as an industrial consultant and that he is still alive.

The following letter was received from Frank Bell: "I realize you need class notes, but when things go along as usual there is not much to say. We have, and are, experiencing a severe drought here; good for the construction business but very bad for farming and general conditions. If we don't get rain soon we will all be in trouble. By the time this reaches you the election will be decided. We hope to put Texas in the 'Ike' column, but its a 50-50 case, I think. The Uvalde Construction Company is having one of its best years,

but by the time income and excess profit taxes get to one, the greater portion goes to mink coats in Washington. Our B & B Equipment Company is likewise doing well, with, however, the same result as above. On the other hand, Bellvue Orchards and Farms at Raymondsville in Rio Grand Valley (a business shared in partnership with my oldest son, Frank) had our fruit trees parched out by the freeze two years ago, and the irrigation lakes are dried up which knocks out the crops; so the picture there is not so cheerful. However, Frank has managed better than most of them and it could be worse. By the way, Frank was in Arizona on business and called to say hello for me to Tom Saul. Tom represents the Southern Pacific Railroad in all that division, and Frank says he looks fine. I did not get the details except over the telephone as Raymondsville is 500 miles from Dallas. I get a letter from Hal Manson occasionally, most of which is taken up with complaints about my hand writing and spelling. The advantage of this kind of letter is you have to read it about four times before you can make it out which, as you see, is at least impressive. I see Zandt Beall in Ft. Worth occasionally, as Frank married his daughter. My youngest, Ed, M.I.T. 1948, is doing a good job as assistant general superintendent, Uvalde Construction Company, but as we can't seem to get him interested in matrimony, it makes me fall behind on the number of grandchildren. I only have two, which is not much to brag about as a record when my younger sister has eight. I certainly had a pleasant day with Jack Babcock at the engineering centennial in Chicago. I went there principally for the Society of American Military Engineers (being a national director). We put on a great show. Did Jack tell you we sat behind former President Hoover at the 'Adam to Atom' production. Regards to you all." — HERBERT S. CLEVERDON, *Secretary*, 120 Tremont Street, Boston, Mass.

## • 1911 •

You all doubtless read in the Institute Gazette in last month's Review of the Silver Stein Dinner of the M.I.T. Club of New York at the Waldorf-Astoria on December 3, at which Senator Tom Desmond '09 — an honorary member of our Class — was presented with the Silver Stein Award "in recognition of his many years of service to both the Club and the Institute." It was a well-deserved honor for Tom and it was both an honor and a great pleasure for your Secretary to have had a part in the program. At the invitation of the Club, Sara and I were guests at the dinner and overnight, and I was happy to be able to lead songs and cheers and to present a series of musical memories, titled "The Tech Show Story," which was well received.

Our only disappointment was to find so few class members at the party — although it was fine to have Jim and Toni Campbell and Walter Welch along with us representing the Class. Both Tom and Alice Desmond seemed particularly pleased with an original parody on the early Twentieth Century hit, "Mister Dooley," which I composed especially for the occasion and sang as a concluding

part of my spot on the program. Here's how it went: "Who was it graduated from our Tech in Nineteen Nine, and then in the construction field was doing mighty fine? Who next decided that he then should really serve the State, and since then up in Albany is going simply great? (Chorus) It's Mister Desmond, our own Tom Desmond, Who always does so much for you and me (That's fine!); He's diplomatic and democratic, So here's to our Tom Desmond — M.I.T. (Aught Nine!)" We had a particularly enjoyable renewal of acquaintance also with Molly Scharff '09 and his wife.

We were sorry to learn of the death of Mrs. Ina Elizabeth (Wahlstrom) Hassett, wife of John Hassett, V, at her home in Worcester on December 6. A native of Napes, Finland, she came to America with her parents at the age of three, became a graduate nurse, and at one time was assistant superintendent of nurses at Burbank Hospital, Fitchburg. She was also one of the leading exhibitors of flowers in Worcester County, and at the time of her death was a member of the board of trustees of the Worcester County Horticultural Society. She won many prizes at horticultural shows throughout Massachusetts and also was a lecturer on flower arrangement and a developer of several new plant varieties. Besides her husband — who is senior inspector in Worcester for the Massachusetts Department of Labor and Industries — she leaves four sons, a daughter, two nieces, and three grandchildren. Our sympathy has been expressed to John and his family.

Pursuant to our report on the death of Augustin Frigon, VI, who died in Montreal, July 9, and whose obituary we included in the first fall notes (November), a letter of appreciation is at hand from his son, Raymond C. Frigon, a 1941 M.I.T. man, now with the Technical Assistance Administration of the United Nations in New York City. Young Frigon said, in part: "I was certainly unprepared for the news of his death, for I had seen him in late June and had left with him my wife and two children, while I looked for housing in New York. My father was proud of his grandchildren and I am told that he often spoke of them at work.

"Dad was a man who did much in his lifetime and did much for others, and at the same time was a good father — of the now vanishing patriarchal type. In his death I lost an adviser which I shan't be able to replace. I do not know how the word got around that I had been killed in World War II! — but I suppose it is the same form of garbled information that left out mention, in most news dispatches, that Dad was also survived by two grandchildren. I hope that I shall have the occasion to meet you personally."

The Boston *Globe* in its "Uncle Dudley" lead editorial on December 6, titled "Ike's Trip," said in part: "The next President's cautious appraisal of the Korean problem may look a little tame compared to the current crop of proposals which have been aired just at this time. Senator Paul Douglas, for example, would drive to the Yalu River, conquering all of Korea. General George Kenney, I, expresses his willingness to tackle Red China. And to-



day General Douglas MacArthur breaks a silence of nearly five months to hint that a 'definite solution' to the Korean conflict exists."

Incidentally, I was sorry to miss a chance to see George early in December, for on the same day (December 3) that Sara and I were in New York for the M.I.T. Club dinner, George, as President of the Arthritis and Rheumatism Foundation, was in Boston meeting with chapter chairmen of Massachusetts. A year ago I attended a similar meeting with our Gardner chapter chairman, following which we voted to include "arthritis" in this year's Community Fund Campaign—for two years now, in Gardner, we've gone "over the top," and the fund is only two years old.

Had a nice note from President Carl Ell, XI, of Northeastern University, Boston, thanking me for being "so generous in the things you say and the space you give to Northeastern in the 1911 class notes." "M.I.T. has moved so far ahead since you and I were students there," he continues, "that it is difficult to keep up with the progress of the Institute and even more difficult to actually comprehend the ramifications of the work of this magnificent institution of which we are graduates."

"It has been a great regret of mine that I have had opportunity to see so little of our classmates since the year 1911—but as the world wags, there seems to be no other choice. I was delighted to note that Jack Herlihy, II, was recently made a director of the Boston Edison Company, a recognition long and well deserved. I hope all is going well with you and yours and my best wishes to all for the days ahead."

In a recent issue of *Boston Business*, monthly publication of the Greater Boston Chamber of Commerce, there is a good picture of the "First Shovelful of Earth being taken up by President Carl S. Ell of Northeastern University in ground-breaking ceremonies recently for the institution's new gymnasium and cage." In his mid-November report to the annual meeting of the university's corporation, Carl reported that Northeastern's assets had increased by \$1,294,430 to a new high of \$12,366,168 during the 1951-1952 college year.

Bill West, II, who has for some time been living in retirement at Ephraim, Wis., apparently is "back in harness"—for we have a new address from the Register of Former Students, which shows him to be with Industrial Controls, Inc., 525 North Noble Street, Chicago 22, Ill.—Harry Tisdale, V, writes that "both Grace and I will plan to join the informal class get-together at Snow Inn, Harwichport, Mass., the third week end in June this year—you can also count on Joe Harrington, VI, and Rose." He said I misread an earlier letter, for the new office of the American Dyewood Corporation in Belleville, N.J., is not near Scarsdale, N.Y., where the Tisdales live—"but although I have to drive 32 miles each way, I would rather do that than move over there." Just learned that John Bigelow, IV, city engineer in his native Marlboro, Mass., has been re-elected to the board of directors of the Marlboro Chamber of Commerce

and probably will continue as its secretary.

At this mid-December writing of the class notes, Christmas cards from classmates are beginning to come in, as always. One particularly novel and timely one is at hand from Harold Babbitt, XI, and his wife, Elma. Picturing a semi-map of the world, it charts the course of the North Capes of Norway-climaxed trip this University of Illinois professor and his wife took last summer, as reported in the 1911 notes for November. Admiral deFlores, II, comes up with a novel rocket-ship Christmas sketch for his card this year—very clever, Monk—while the Nat Seeley (II) fine family picture is growing each year, and always such a happy group.

Jack and I will be hoping to see a lot of you at this year's Midwinter Dinner Meeting in early February and don't forget that Alumni Day at M.I.T. will be Monday, June 15, and then on the following Friday, Saturday, and Sunday—June 19-20-21—we are planning an informal get-together for classmates, wives, and children at Snow Inn, Harwichport, on Cape Cod. Finally, have you taken care of that Alumni Fund subscription? Thanks and au revoir!—ORVILLE B. DENISON, Secretary, Chamber of Commerce, Gardner, Mass. JOHN A. HERLIHY, Assistant Secretary, 588 Riverside Avenue, Medford 55, Mass.

## • 1912 •

John Hall of Freehold, N.J., has come through handsomely with a letter that should prove an inspiration to others in the Class to get busy at once and do likewise. John says: "For a long time now, several years to be exact, I have been promising myself to write to the Class of 1912. Now that I have something (enclosed) which makes that easier, I am really going to do so. What it says is substantially correct and let your conscience be your guide as to what you do with it. You can very properly put me down as the Class's poorest correspondent and worst scientific backslider. I was a good and loyal member of Course XI but stuck to Sanitary Engineering only a little more than a year. I then became involved in other aspects of public health and have been in and out of them ever since. I should be ashamed of my record as a rolling stone but, for some reason, I'm not. I have enjoyed almost every one of the many jobs I have had and, in some, have made a little contribution that seemed to be worth while. I have resigned, retired, and just plain quit more times than I can remember, occasionally too soon, but never too late."

"I have never felt otherwise than that my experience at M.I.T. was one of the best things I ever had, even though very few of the actual facts I learned there were put into use. I do feel a little sorry for the fellows who have followed us there, however, wonderful as the new buildings and equipment are. There is so much more to be learned now than in our time. I, for one wouldn't dare to try it. Well, I feel better now, even though the message I send is a minor one from an insignificant member of 1912. However, if it serves as a stimulant for more of us to sit down and do likewise, it will serve a good purpose."

Some of them will really have something to say and I'm hoping they will."

The "enclosed" referred to above is a citation of the American Social Hygiene Association on the occasion of his honorary life membership award, which reads: "One of the rolling stones that ever bounced along the public health highway," John Hall says of himself. Others call him 'Honest John' or 'Johnny-on-the-Spot.' For the American Social Hygiene Association he has done more jobs in more places than any of us. More times than even he can remember he has resigned and retired. His most recent 'final' retirement occurred last fall after a strenuous summer as an ASHA field representative. No one will be surprised, however, to hear that he has just returned from Alaska, where he went on a social hygiene mission of special importance to national defense. John Hall was born in the old village of Freehold, N.J., which he still calls home. Following 1912 when he received a degree in sanitary engineering from the Massachusetts Institute of Technology, he worked with the state health departments of Massachusetts, Maryland and his home state. He married Lillie Worden on April 24, 1915, and one child, a daughter, was born to them. Mr. Hall and his wife have three grandchildren, one brand new. This situation, he says, calls for full utilization of all his social hygiene experience.

"World War I saw Mr. Hall an Army Sanitary Corps captain in France, where after the Armistice he studied at the Sorbonne and gave the Republic a thorough inspection. Business experience came next—as purchasing agent for a New York cloth concern, as salesman for a chemical company, as cashier in his hometown bank, and as an architect and builder there. But interest in public service and a flair for propaganda soon brought him back to the public health field. As editor and promoter of a Health Bulletin Service initiated by the American Public Health Association and later taken over by the New Jersey Health and Sanitary Association—of which he is long-time secretary—Mr. Hall pioneered in the production and distribution of simple, readable articles on many phases of public health. Published in the *NJH&SA's Health Progress* and subsidized as a health education experiment by the New Jersey State Board of Health, these texts were used widely by local health departments and health workers."

"Mr. Hall's interest in social hygiene started in 1916 when as health officer of East Orange, N.J. he became a member of the Oranges' VD Control Committee. This organization, the clinic it operated and the public information materials it produced were models for similar efforts 20 years later. New Jersey's health department kept its VD control division intact through the postwar years and when the 1936 upsurge of VD activity started, the New Jersey program was promptly stepped up and John Hall was called in. His flair for public education was put to use, and the posters and pamphlets he prepared and meetings he helped to promote got favorable mention across the country. At the same time he was calling the attention of professional workers to New Jersey's program by articles in the *Journal of Social Hygiene*."

"World War II saw Mr. Hall offering his services where they might be of most value. The U.S. Public Health Service placed him in charge of sanitation for Nevada's important Las Vegas area. Later he spent a year in similar work for Alaska's health department. He left Alaska to join ASHA's staff, which since 1939 had been doing its part to build military and industrial health and morale by providing VD educational materials for the Army and Navy and by stimulating communities to provide clean community conditions for servicemen and defense workers. The important job of cleaning out prostitution nests near military areas—many of them strongly entrenched and preying on soldiers and sailors—challenged Mr. Hall and he joined the ASHA field staff, first in the southwest, then in the middle-eastern states and later in eight far west states. His aggressive and conscientious work brought about improvements in strategic areas. A postwar barnstorming tour of important cities by top VD and Social Protection officials plus Mr. Hall—which reached large gatherings of municipal authorities and citizens—apparently clinched wartime gains. Six years later frequent surveys of these formerly wide-open cities find them—with very few exceptions—practically free from commercialized prostitution.

"Mr. Hall retired from these activities in 1946. When mobilization began in 1948 and the Defense Department and Public Health Service again needed ASHA's aid, 'Johnny-on-the-Spot' came out of retirement to serve as ASHA's director of field services, to recruit and train a new field staff and to re-establish needed services in seven field offices across the country. Although Mr. Hall has retired from ASHA's full-time permanent staff, he has made himself available for special emergency assignments of the kind which recently took him to Alaska. Between hither and yon assignments, Mr. Hall edits the New Jersey Health Officers Association's *News Letter*, helps to promote legislation for improved local health administration in New Jersey, and serves as president of the Freehold YMCA board. He likes to putter around his garden in the summer and to build things in the winter, specializing in flowers, brick fireplaces for backyards, high-class indoor painting and carpentry. He claims to be the slowest—but not the worst—mechanic in the world. Mr. Hall's contributions to the American Social Hygiene Association and through it to the health and welfare of the nation have been singularly diverse and practical. The Association is proud to include him among its distinguished group of Honorary Life Members."

We extend sympathy to the family of John L. Bray, III, who died on December 7, 1952. The following obituary appeared in the *New York Times*: "Dr. John L. Bray, Professor of Metallurgy at Purdue University since 1923 and head of the school of chemical and metallurgical engineering from 1935 to 1947, died here . . . at the age of 62. Dr. Bray was born in Milbridge [Millbridge], Me., was graduated from Massachusetts Institute of Technology in 1912 and received a Doctor of Science degree in 1930. After one year of teaching

at MIT, he had ten years of experience as a metallurgist in Central and South America and British Columbia. During World War I, Dr. Bray served as a major in the Army Corps of Engineers. From 1919 to 1921, he was superintendent of a cyanamide plant in Honduras and in 1921-22 he was Professor of Metallurgy at Nova Scotia Technology College in Halifax. After a year as metallurgist with United States Tariff Commission, he joined the staff at Purdue in 1923. Surviving are his widow, Mrs. Jean Shaw Bray; a daughter, Mrs. Barbara Boyer of Terre Haute; a son, Leighton Bray of West Lafayette, and a sister, Mrs. Henry Cross of Milton, Mass."

Dr. Eugene B. Levine, son of Max Levine, VII, died on February 26, 1952, at the age of 38, an untimely victim of Hodgkin's disease. Dr. Levine was already renowned for his outstanding work in arterio-vascular diseases. He was author of numerous publications in this field and held many important posts in university, hospital, clinical, and public health circles in Los Angeles. The Library of Temple Isaiah, Culver City, now being erected, is to be dedicated to his memory in appreciation of his active communal work and ideals of service. In recognition of his contributions to the practice of medicine, and indicative of the esteem in which he was held, his colleagues have established the "Eugene B. Levine Memorial Trust Fund," for assisting his three young children and medical students, especially in the field of cardiology. Our sympathy goes out to his parents, Max and Adele Levine, in Honolulu.

We regret that we could not accept the invitation of Antonio S. Romero to attend the first Puerto Rican fiesta of the M.I.T. Alumni at San Juan, November 12 to 16, 1952, on the occasion of the inter-American convention in celebration of the centennial of the founding of the American Society of Civil Engineers.

Congratulations to Jerome C. Hunsaker, retired Head of the Department of Aeronautical Engineering at M.I.T., who has just had published a book entitled *Aeronautics at the Mid-Century* (New Haven, Conn.: Yale University Press, October, 1952, \$3.00). The inside flyleaf states: "A noted aeronautical engineer here gives his views on the past, present, and future of aviation and its impact on our civilization. He outlines the short but technologically vast history of aeronautics, not forgetting that the airplane was born into a time of political strain to develop into an instrument for evil as well as good. He indicates some of the effects that the increasing range and utility of planes will have on trade, travel, culture, and politics. There is no sound basis, he declares, for the once predicted increase of light airplanes flown for fun, but he does foresee the extensive use of helicopters in the air transport pattern. In the future we shall also see the adoption of jet propulsion for commercial aircraft which will double existing air speeds. Research tends to speed up obsolescence, he finds, but he calls for greater research in aeronautics to guard against becoming a second rate air power. These findings and many others are presented by one of the nation's foremost ex-

perts in a volume of substantial interest to the general reader. The book is profusely illustrated with photographs of the planes that have made aviation history. Jerome C. Hunsaker is head of the Department of Aeronautical Engineering at . . . Technology and designer of the Navy NC4, the first flying boat to cross the Atlantic. He is chairman of the National Advisory Committee for Aeronautics. *Aeronautics at the Mid-Century*, Mr. Hunsaker's first book, is based on the Terry Lectures delivered at Yale in 1951."—FREDERICK J. SHEPARD, JR., *Secretary*, 31 Chestnut Street, Boston 8, Mass. *Assistant Secretaries*: LESTER M. WHITE, 4520 Lewiston Road, Niagara Falls, N.Y.; RAYMOND E. WILSON, 8 Ogden Avenue, Swarthmore, Pa.

## • 1914 •

In his own inimitable style, Charlie Fiske held the annual New York class dinner at the University Club on the evening of December 3. In spite of inclement weather and several conflicts with other events, an even 20 were present and a thoroughly enjoyable evening was experienced. In fact, when the club showed signs of wishing for adjournment of the festive occasion, part of the group adjourned to Charlie's nearby Park Avenue apartment, where Charlie and Mrs. Fiske took over as gracious host and hostess.

The principal subject discussed was that of our 40th reunion to be held at Pine Orchard, Conn., in mid-June of 1954. This is the same place where we held our 35th. Charlie Fiske will act as chairman of the reunion committee and will ask a representative group to help him get out a large attendance. A smaller, special group will attend to a few specific assignments. Your Secretary will see that by the end of 1953 a new class directory is published and also that the little matter of finances is looked into.

Classmates meeting at the University Club were: Affel; Barratt; Crankshaw; Dawson, coming down from Pittsfield, Mass.; Dickson; Faunce; Fiske; O. C. Hall; Bert Hadley, who journeyed from Middlebury, Vt.; Turpin Hsi, only recently returned from China; MacLeod from Providence, R.I.; Dana Mayo, who made a special plane trip from Newcastle N.H.; Morrison from Boston; Ober; Owen; Parsell from New Haven; Peaslee from Hartford; Perley; Richmond from Boston; and Townend. Three missing the meeting were: Clarke Atwood, who fell and broke his arm; Crocker, who was just departing for Europe with Mrs. Crocker to visit their son, an Army medical officer in Germany; George Whitwell, who was in bed in Philadelphia with the grippe. Your Secretary saw George in New York two days later, and he certainly then looked as if he still should have been back home in bed. Charlie Fiske maintains a special mailing list of greater New Yorkers and would be very happy to add the names of out-of-town people who would like to receive notices of these annual dinners.

Alden Crankshaw, who has been eastern service manager for the Acheson Colloids Company with headquarters in New York City, is leaving the area for Port Huron, Mich., where he is taking over the sales managership for the company. He



expects, however, to be in the East frequently — especially when there is a 1914 dinner taking place.

Dave Gould is another who is moving slightly west, but only to Bainbridge, N.Y., which is near Binghamton. For some years Dave has been located in Philadelphia with the chemical division of the Borden Company. His specialty has been plastics, which the company markets under the name of Durite. His new assignment is with the research laboratory of the same company.

L. D. Faunce, who formerly has been a district buildings supervisor in various districts for the New Jersey Bell Telephone Company, has been promoted to division buildings supervisor of the Eastern Division with headquarters at Jersey City, N.J. This is the division that has the very high concentration of telephones for the state of New Jersey. It extends southward from the New York state line to include the Bayonne area, and westward to include Paterson and Passaic. — H. B. RICHMOND, *Secretary*, 275 Massachusetts Avenue, Cambridge 39, Mass. ROSS H. DICKSON, *Assistant Secretary*, 126 Morristown Road, Elizabeth, N.J.

### • 1916 •

This column should be in your hands shortly before February 14, and so that no one will spend that day in the dog house we remind you now not to forget your fair lady on that day. Remember her with flowers, candies, a card or what-have-you; but be sure to remember her on Valentine's Day.

The changes of address received since last month are: Arthur K. Stewart, 280 Mansfield Avenue, Willimantic, Conn.; Edward B. Sebben, 1073 Pearl Street, Denver 6, Colo.; Mrs. Sidney S. Robins, Center Conway, N.H. We were very pleased to receive early Christmas cards from Steve Whitney, Bill Drummey, and Irving McDaniel. (Column being written in mid-December).

The mail bag brought this interesting letter from Aime Cousineau: "I must say that I have nothing very new to report since my last letter to you of January 11, 1950. However, this year I attended the American Public Health Association Annual Meeting held at Cleveland, Ohio. The enclosed summary of a paper shows the purpose of my being there this year. In Cleveland, I met Howard W. Greene and Joel I. Connolly of Chicago. The latter expects to live in Manila in the Philippine Islands during the next two years. He has applied for retirement in Chicago and has accepted an assignment in Manila through, I believe, the United Nations Organization. Howard W. Greene is connected with the Cleveland Health Council, as general secretary and head of its Statistics and Research Division. Both are well and happy. I was also informed that Professor Horwood of M.I.T. is presently in Burma on a similar assignment (South of India). I have attended the usual M.I.T. breakfast during A.P.H.A. meetings at which the presence of Professor and Mrs. Winslow is always highly appreciated."

The paper which Aime enclosed with his letter was an abstract of the paper

which he presented before the joint session of the Engineering Section of the A.P.H.A. and the Conference of Municipal Public Health Engineers at their annual meeting at Cleveland, Ohio, October 21, 1952, and was entitled "The Team Approach To A Better Environment — The Relation of City Planning to Public Health." Aime is the director of the City Planning Department in Montreal, Canada.

We were pleased to receive the following letter from Ed Hale: "I have just read your 1916 notes in the December, 1952, Technology Review. I note as a prize for sending in news you offer to send a class list. The premium appeals to me — hence this letter. [Secretary's Note — List as of 1/1/53 now available for those who would like one.] I am still with the Liquid Carbonic Corporation at its general office in Chicago along with a number of other M.I.T. men.

"This year my son transferred from Brown University and is now entered as a sophomore in Course II at M.I.T. I was, of course, very pleased at this action and am glad to report that he is enjoying himself at Cambridge and is pledged to ATO Fraternity. It would be interesting to learn sometime if there are more sons of other Class of 1916 graduates who are now at the Institute. I recently had my first experience as an Educational Counselor when I represented M.I.T. at the Proviso Township High School College Day. There were about 85 college representatives attending this meeting. About 18 boys indicated interest in M.I.T. Out of these, I believe four would be very exceptional applicants — one of these has the highest scholastic record and is also very active in extracurricular activities. I hope that he will be able to surmount the financial problem which exists. During the day my fellow counselors representing other schools were very busy showing pictures of their campus, buildings, and so on. As I was going home I realized that not one of the M.I.T. applicants had asked for any information at all about our facilities. The principal questions were 'How do you apply?' and 'How much does it cost?'

"There are a number of other counselors in the Chicago area and I understand they are planning to expand this program at other spots. I highly recommend it as a way of helping our school get the best possible type of student available." This does sound like a very interesting undertaking. Ed, and you may have, through this letter, interested others sufficiently to warrant their becoming part of this same program in their respective areas.

Horace Burnham made us very happy with this letter: "Almost every letter I have written for some time has been for the purpose of apologizing for something and, in this case, I have plenty to apologize for. First is the photograph of the class reunion in 1951. I did receive the picture and appreciated it immensely. I have seen very few of the boys of '16 since leaving school and I found it extremely interesting to compare how they all look today with the mental picture I had of most of them as they looked in those days. Can it be that I, too, must admit to so much of a changed appearance? Of course there is a

bit of grey in the hair and my new teeth are better than the ones I had to get rid of, but I don't seem to feel too much of a change. Still, after thinking it all over, I don't believe I would be quite so enthusiastic about following Rusty White as in the day when we marched behind him to Boston Common ready to go after Pancho Villa.

"I had fully resolved to attend the reunion in 1952. In fact my work often takes me down to the Cape and I could have easily made a trip there and killed two birds with one stone. You see, I have been in the engineering department of the Hartford Accident and Indemnity Company for the past 18 years and have had charge of the work in eastern Massachusetts for the past three years or so. However, due to manpower conditions, it has been necessary for me to dash into Maine, New Hampshire, or Vermont at almost a moment's notice, and that is just what has happened too many times when I had other plans. Also, because most of our work does include traveling around the territory most of the time, I have missed out on practically all of the Tuesday luncheons. By the way, where and when are they being held now? That shows you how far behind I am. [Secretary's Note: Class of 1916 luncheons in the Boston area have been discontinued temporarily; when they start up again, all members in the Boston area will be notified.]

"The several letters I have received from you have also been appreciated. I was especially interested in the one of May 19, 1952, in which you mention the campaign of Allen Giles for a position on the Melrose School Committee. Allen lives only two houses from me and I have been able to follow his public activities thoroughly. The people of Melrose like his work as he has been able to win out in almost any political job he has gone after. This letter does not contain much news that you don't already know but I hope it will atone somewhat for my being so near and yet so far." There's no need to apologize when you can write such interesting letters as this, Horace. Thanks for remembering us.

Your Secretary was very pleased to have Hen Shepard visit him at his plant recently. Hen looked very well and the few minutes that we had together were very enjoyable. His interest in the old-type cars still flourishes.

Here's a letter from Phil Baker that was mislaid and has only now come to light after having been in our files for a couple of months: "The class picture came, for which I am very much obliged — it tells the whole story. We used to see Hy Ullian in Detroit but not for some time now — nice fellow. How like Adlai S., Steve Berke looks, and so does Theron Curtis like Jim Farley. You retain your youth like Cy Guething! Jim Evans has certainly filled out so I'd hardly know him. Where was Chuck Loomis? I shall write him directly. There are a lot of oldsters missing. Frankly, most of these men have 'timed' away from my acquaintance, which is the penalty for not constantly renewing their friendship and acquaintance. They say a banana off the bunch is soon lost." That's very true, Phil, and we might carry the

analogy further and say that while the banana is a part of the bunch it has vigor and vitality, but when separated from the bunch it dries up and withers away.

It was good to see Chuck Loomis right on the ball developing interest in and support of the 1916 50-year gift to M.I.T. We certainly feel that this is a worthwhile undertaking and we sincerely hope that the response to Chuck's recent letter of solicitation will be overwhelmingly successful.

In a recent issue of *Popular Mechanics* we came across this interesting item about Cab Holbrook: "... Handling apples from orchard to packing shed can easily bruise them. One solution has been hauling them in small trailers lined with foam rubber. Newest is the car-ferry system used by F. Cabot Holbrook, an M.I.T.-trained engineer who turned apple grower. He built a double-decker trailer, so no apple box would sit on top of other fruit. Instead, each box rests on tracks equipped with roller-skate wheels. At the packing shed, the receiving dock has similar tracks to match. The tractor-hauled trailer pulls up alongside. The dock is adjusted by chain hoist so that its tracks line up with those of the trailer, then boxes are rolled off without banging and bruising. When the trailer leaves, tilting the dock with the chain hoist sends boxes gently sliding down to the track that feeds them to the automatic grader. ..."

"Another of Holbrook's workshop products is the double-barreled spray gun he adapted from standard equipment. Its lower line has ten nozzles for 'shotgun' spraying. Turning a handle switches to the upper, single-jet line for spotting work. When Holbrook's spray machine moves through the orchard, there aren't any missed branches. The rig itself carries four automatic nozzles on each side. For limbs higher and farther away, an aluminum tower was welded on and it carries two 'sharpshooting' men, each with a double-barreled gun. For good measure, the tractor driver himself mans a swivelling spray gun used low on trees and around corners. ..."

This sounds like quite a setup, Cab, and one that would be very interesting for many of us to see. Brattleboro, Vt., is familiar to many of the fellows in our group, and it is very possible that you will find some of them dropping in to see you and the "home-grown" equipment which you are using on your orchard.

In the September 4, 1952, issue of *Engineering News-Record* we found a very interesting article about our classmate, George Petit, and his system which may aid in the forecasting of construction costs. We quote below, in part, from this article: "The fascinating possibility of being able to forecast major trends in construction costs with a fair degree of accuracy — and based on existing data — has been advanced by George H. Petit, who is now a supervising engineer for The Travelers Insurance Co., at Hartford, Conn. His system — which is in fact a new visual means of interpreting cost data for trends — is based on the *Engineering News-Record* Construction Cost Index. Because it distinguishes between major long-range, cost movements and minor fluctuations, it

seems to offer an important forecasting tool for construction men.

"Checked against previous known conditions, Mr. Petit's method seems accurate enough in marking trends, directions and strength. . . . Plotted and then compared with known cost trends over past years, Petit's system works very well. Apparently, it would have made a good basis on which to plan construction work. Four of the things the system does very well are: Revealing uptrends or downtrends of great momentum; trend reversals; cost stability over extended periods; slow or minor movements. . . . This 3-way trend recognition system based on the ENR Construction Cost Index should add a new dimension to the hazardous art of predicting the movement of construction costs. Its originator is George H. Petit who saw service with Turner Construction Co. and other construction firms before joining The Travelers. . . ."

We recommend the complete article as reading which would be well worth while. Along these lines, we get articles from others in our Class which have appeared in major magazines and as space permits in future issues of our column, we will present portions of these papers.

We are still waiting for replies from some of you to our letter sent out just before Christmas requesting your views on when, where, and how often we should have our class reunions. How about putting something in the mail on this for us today? See you next month. — RALPH A. FLETCHER, *Secretary*, Post Office Box 71, West Chelmsford, Mass. HAROLD F. DODGE, *Assistant Secretary*, Bell Telephone Laboratories, 463 West Street, New York, N.Y.

## • 1917 •

The lack of news on the 1917 front has become acute. All postings of current activities of the Class will be gratefully received by your Secretaries. It cannot be that all happenings to class members have tapered off to such an extent — may we hear from you to the contrary.

One note was heard from Irving Crosby, who telephoned to say that he would be leaving Saturday, December 13, for the Belgian Congo — and would be returning in late January. An agency of the Belgian Government has called on I.B. for assistance. Their geologists have encountered some tough foundation problems and seem to be stumped — so I.B. is off to the rescue. He and his wife will fly to Brussels. Mrs. Crosby will stay in Europe while he will head for Africa alone. I.B. promises to bring back pictures, and we shall look forward to an interesting account of his trip.

Apparently the only other activities of 1917 consist of transporting the homestead from one area to another: Paul Bertelsen has left Beverly Farms, Mass., for New York City and is now residing at 19 East 79th Street. Arthur Gilmour balances the scale by moving from Lewiston, Maine, to 91 Concord Street, Haverhill. Claudius Roberts, ever on the move, can now be reached by writing to Ord. Sec. Hq. AFPE APO 343 c/o postmaster, San Francisco.

We are sorry to report the death of Joe McManus on December 12. — RAYMOND STEVENS, *Secretary*, 30 Memorial Drive,

Cambridge 42, Mass. FREDERICK BERNARD, *Assistant Secretary*, 24 Federal Street, Boston 10, Mass.

## • 1918 •

Swooping along the roller coaster of time, we approach our 35th college reunion; not exactly simmering with genius, but definitely holding our own a cut above the lower brass-bound echelons of culture. Here's proof. Ted Wright, in answer to questions you all received, says: "My present position at Cornell is vice-president for research and president of the Cornell Aeronautical Laboratory. I have two boys, one of them working as a civil engineer in Boston, and the other working on a research project in international relations in Washington. I have no grandchildren. Political preferences are pretty difficult to give at the present time as I think both presidential candidates are competent. My capacity as an author has been restricted to numerous articles and speeches on educational and aeronautical topics. As to public service — I am a member of the National Advisory Committee for Aeronautics and chairman of its Aerodynamics Committee. Hobbies are principally in the athletics field, including golf and tennis, with a great interest, however, in all major intercollegiate sports. I have no particular plans for retirement, which is some distance off."

Picking up the pen where Ted laid it down, John Poteat replies: "The information you ask is, of course, quite confidential, but I assume the whole thing will be a confidential affair. My present occupation is to try and avoid work as carefully as I can, but success in this direction is rather fleeting. As general manager of the Range and Water Heater Department of General Electric, I am now responsible for the construction and equipment of a plant in Louisville costing about \$25,000,000, which I confess scares me every time I see it because my department has to pay for it some day. I have had my job ever since 1933 and I presume it is quite an unusual situation, but I am about the only man I know of in the General Electric Company that hasn't been promoted in 25 years. Confidentially, the business has grown in that time about 100-fold so that, whereas I could handle it with half a dozen folks then, plus the manufacturing operation of 300 or 400, it now takes around 400 in the engineering, manufacturing, marketing, and financial overhead groups, and about 2,500 in all — or will when we get into production next year. I have two children: a daughter who graduated from LaSalle in June of 1951 and is taking a nurse's training course at a hospital here in Louisville; and a son who is a freshman at Denison University at Granville, Ohio. Obviously, therefore, there are no grandchildren in our immediate family. By the time you get this, I hope my political preferences will have been honored by the voters of this country, at least once in the last 20 years. I am no author nor do I have a patent on that situation. As to public service, I suppose I am no worse and certainly I am not better than a majority of folks who assume their responsibility in civic organizations and churches as trustee or board member, to try and make the



community in which I live a somewhat better place. I am on a few boards, but they are not important nationally. My present hobby is three-dimensional photography in which I became interested a considerable time before it got popular. Now with equipment available on the market, its popularity is growing by leaps and bounds. I suppose I have some unfulfilled ambitions, but I don't waste any time these days worrying about them since my main ambition to be a reasonably decent citizen and earn my way in the world occupies most of my time. And when the General Electric Company gets ready to kick me out about seven years from now, I suppose I will give my time to some eleemosynary institution and enjoy the declining years of my life in modest and untroubled circumstances."

Next witness is Thomas Knowland, whom you should remember as manager of the Rifle Team. He was also a captain in the regiment with dinky uniforms we used to sing about: "This being my first offense in presenting biographical data to the Class, I may perhaps include a few of the early details. On leaving M.I.T., I fought in the battle of Washington with several other members of the Class in chemical warfare, this desperate period being followed by a year on the staff at M.I.T. in hopes of latching on to a big job. Eventually, fastened on the rubber industry, to which I have since cleaved. Business efforts have been largely concerned with development, having been, successively, development manager of Hood Rubber Company in Watertown, Mass., and Boston Woven Hose and Rubber Company in Cambridge (my present connection), where I am now pegged as assistant to the president. Have traveled a bit into odd corners in the course of business, and have perhaps 50 U.S. and foreign patents of sorts, but no publications worthy of note—or anything else I am aware of. We have two boys, aged 25 and 27, both married and both in the selling game. No grandchildren—as yet. Politics: hide-bound Republican. Present hobbies: puttering with photography and oil painting (both primitive), and polite conversation."

Don Goss, in a shocking example of either simple-mindedness or the Institute's dismal lack of adequate attention to English composition, shows his statistical training and economy of materials in carpentering any structure, even a sentence. Quoth he: "As for the name, rank, and serial number routine, here goes: Present Occupation—architect; Children—four (two girls, two boys—three married); Grandchildren—five (one more on the fire); Political Preference—I like Ike; Author—no; Patents—no; Public Service—a few town committees; Hobbies—Boy Scouts, water colors, golf; Extra-curricular—bank director, civilian defense warden, blood donor; Unfulfilled Ambitions—to beat the income tax; Retirement—Are you kiddin'? An all-wise Nature takes care of that usually. Let me know when the get-togethers take place hereabouts and I'll be there."

There's more to come, of course, but, like "the boast of heraldry, the pomp of power, and all that beauty all that wealth ere gave," it too must wait.

On October 5, Bill Felsing, who had been professor of chemistry at the University of Texas, died of a heart attack. He had been connected with the university for 35 years, or ever since he received his doctorate at M.I.T. During World War II, he came back north temporarily to serve in the underwater sound laboratory at Harvard. — GRETCHEN A. PALMER, *Secretary*, The Thomas School, The Wilson Road, Rowayton, Conn.

## • 1919 •

A very interesting article appeared in the November issue of the *Chemical and Engineering News*, giving great praise to our classmate, George Bond, who is a charter employee of the Houdry Process Corporation and one of the leaders of research for this company where they have been conducting extensive research to unravel the mystery of catalysis.

Jack Fleckenstein's daughter, Joan, is now a senior at M.I.T. taking Course XII, Geology, and is scheduled to graduate in June. He adds: "She hopes to get a position as a field geologist with some major oil company, but has been told females are not welcome as field geologists. If they knew Joan like I know her, they would know that conditions in the field are no handicap to an outdoors girl like Joan." He summed up his note with the fact that he had done a lot of bird hunting in the fall—with good success. He sent his very best regards to all our classmates.

Had a very nice note from Roger T. Hall which I quote: "I don't have anything very interesting to report, since my firm is still doing the same business as usual—trying to keep pace with the rapidly growing nation's capital in the construction field. Would like to say that we old residents of Washington engaged in activities outside the government have been wondering for years how long the people of this country would work along with the New and Fair Deal, and the change, that last month they fully decided was necessary, is very welcome here. We're looking forward to the next four years with more enthusiasm and good cheer. Hope to see you and others at the big reunion."

A recent note from S. J. Hayes advises that he became vice-chairman of the committee (Texas) in A.S.T.M. on December 13. He has three granddaughters now. His final comment was—"more waistline, less hair."

Herman A. Herzog writes that his family is all fine. His son is now teaching at the Milton Academy, Milton, Mass. Charles W. Hyde writes that he has been deputy comptroller of the Naval Ordnance Plant, York, Pa., since July, 1951. In August, 1952, he brought his family to York where his three daughters attend school. His present address is: 301 Pinehurst Road Yorkshire, York, Pa., but he is still retaining legal residence in Ardmore.

We extend our best to George A. Irwin in his new home located in Claremont, N.H. He has been in business in this area since 1945, under the name of Irwin Motors, Inc. He handles Pontiacs, International, and GMC trucks; also Army surplus trucks and parts. He is the proud grandfather of eight at this writing.

Don Kitchin certainly should be con-

gratulated on his Christmas card, presenting his five grandsons—future M.I.T. scholars, I am sure.

We extend our condolences to the family of our classmate C. L. Whittemore who passed away on October 11. For 30 years he had been associated with his brother in the Whittemore Brothers Automotive Supplies, which was sold two years ago. For the past year, he was associated with the C. W. Bowker Real Estate Company. He was a graduate of Phillips Andover Academy and also attended Worcester Polytechnic Institute. He served in the U.S. Navy in World War I. He leaves his wife, Ann. D., a daughter, two brothers, one sister, and two grandchildren. — EUGENE R. SMOLEY, *Secretary*, The Lummus Company, 385 Madison Avenue, New York 17, N.Y.

## • 1920 •

The prominence of our good Class in current alumni circles was brought out very emphatically at the Alumni Council meeting in the new Faculty Club, at which there were no less than four of us at the head table, including the President of the Alumni Association, Ed Ryer, the most recent ex-president, Al Glassett, and the feature speaker of the evening, Dean Ned Cochrane. His talk on the Maritime Commission and his experiences there, was of absorbing interest and was very well received. Other members of the Class who were present at that meeting were Al Burke, Jim Gibson, and John Nalle. If I overlooked any, I hereby apologize.

Pete Ash has moved to Mahwah, N.J., address 251 Miller Road. Ed McCarthy has moved to Oelwein, Iowa, address 403 North Frederick Avenue. Joe Mahan is with the National Supply Company in Pittsburgh. Lee Thomas has left Glendale, Ohio, and is with C. H. Wheeler Manufacturing Company, Philadelphia. Charlie Van Dusen is now in Metamora, Mich., address, 4350 Barber Road. Witold Kosicki has left Detroit and is in Ogunquit, Maine, address 26 Shore Road.

I had a pleasant visit with Allen Addicks, whom I notice is claimed by the Class of '21, but who will be remembered by many of us as he was associated with our Class for a time at least. Allen is living in Jericho, Long Island, and is district manager of the new magazine, *Electronic Equipment*, published by Sutton Publishing Company of New York. — HAROLD BUGBEE, *Secretary*, 7 Dartmouth Street, Winchester, Mass.

## • 1921 •

Flash! Just as we go to press, the Board of Directors of the Chicago, Indianapolis and Louisville Railway Company announced in Chicago that John W. Barriger, President of the company, will become a vice-president of the New York, New Haven and Hartford Railroad Company early in 1953. The board expressed appreciation for Jack's outstanding success with the Monon in his six and a half years as its head. A simultaneous announcement from the New Haven confirmed the new appointment. We wish Jack all the good things he could possibly hope for himself. With Boston on his new line, he'll have to

continue his regular attendance at our reunions and Alumni Day gatherings.

Add to the list of members of the Class whose vocations deviate from the usual pattern, Lewis S. Edgerton, founder of the Colonial Craft Shop on Nantucket Island, and now supervisor and manager of sales and design of the expanded enterprise, renamed the Colonial Mill by the new owner, Marine Lumber Company. Started by Ed in 1948 to preserve the architecture and construction characteristic of Nantucket and to provide a source of authentic reproductions, the enlarged mill and quaint sales shop reflect the success of a hobby. Ability to make his own cutting knives to specifications facilitated the manufacture of entire church interiors—pews, pulpit, choir stalls, altar, doors, Dutch cupboards—all of Colonial design and with typical mahogany latches, for projects such as the remodeling of Nantucket's Old North Vestry, illustrated in a feature story in the New Bedford Sunday *Standard-Times*. A native of Fulton, N.Y., Ed taught engineering subjects at Rochester after graduating in Course XV, and there met another teacher, Mildred Coffin, a descendant of early Nantucket residents, who became his wife. They make their home at 52 Center Street in a house built in 1756.

Andrew I. McKee, Vice-president of the Electric Boat Division of General Dynamics Corporation, Groton, Conn., and a retired rear admiral, has been named director of research and design. A graduate of the Naval Academy who received his master's degree with us in Course XIII-A, he had been officer in charge of submarine design and construction of the Navy's Bureau of Construction and Repair and commandant of the Philadelphia Naval Shipyard. He is a trustee of the L. Y. Spear Foundation and holds the Legion of Merit with palm and the Bronze Star decorations. Two sons have attended Technology: Andrew I. McKee, Jr., '42, and Francis B. McKee '51. Through the courtesy of Alvin Gutttag, Secretary of the Class of 1940, we learn that Aaron A. Tushin is now a patent attorney for Ionics, Inc., of Cambridge. Previously he had served for more than 20 years in the Patent Office, Washington, and was assistant primary examiner of Division 63. William F. Hastings, Congregational minister and one of our four clerics, has left his New York headquarters to aid the refugee services of the World Council of Churches and can be reached at A.P.O. 154, care of Postmaster, New York City. Bill had previously been a minister in Puerto Rico.

Larcom Randall, executive of Larcom Randall Advertising and T. O. Metcalf Company, reports that his business address has been changed to 51 Melcher Street, Boston 10. Larc has been engaged in industrial advertising and printing since 1923. A former class agent, member of the Alumni Council, and president of the M.I.T. Club of Wellesley, he and Mrs. Randall make their home in Wellesley. At last reports, Larcom, Jr., was in an Army tank battalion; Donn, an Amherst graduate, had married Alison Duff, Smith '50, and was also in the Army; Alice was attending Wellesley High School. Manuel S. Vallarta is a member of the committee in

charge of the fifth annual fiesta of the M.I.T. Club of Mexico, which takes place February 5 through 8, Mexico City. New addresses have been received for Robert B. Donworth, Joseph C. Moosbrugger, and Michael Treschow.

Walter J. Hamburger is quoted in the *American Dyestuff Reporter* on a presentation of "Sensation, Psychology and Science," as applied to the design of fabrics from the standpoint of mechanics, aesthetics, and the general interest in subtle performance characteristics such as handle, drape, luster, physical comfort. An industrial engineer in the paper industry, following graduation from Technology in Course II, Walt entered the textile field in 1930 and is one of the founders and current treasurer and director of research and development of Fabric Research Laboratories, Boston. He received the master's degree in Textile Technology at M.I.T. in 1941, the doctorate in polymer mechanics at Brooklyn Polytechnic Institute in 1948, and an honorary master's degree from Lowell Textile Institute in 1951. He has been a lecturer at M.I.T. and Simmons and is a visiting professor of both Polytechnic and Lowell Textile. During World War II, he was a consultant to the Air Force and chairman of the nylon braiders' technical and industrial committees. He and Mrs. Hamburger have a son, Walter J., Jr., who was graduated from Lowell Textile, and a daughter, Suzanne, who is a student at Wheelock College. Receipt of the M.I.T. Student Directory since the January issue of *The Review* went to press, indicates the omission from last month's list of the names of two sons of members of the Class who have continued graduate study since receiving their bachelor's degrees last June. Robert M. Lurie, son of the late Joe Lurie, is a National Science Foundation fellow in Chemical Engineering in residence in Oak Ridge, Tenn. Richard F. Jenney, son of Mel Jenney, is taking advanced work in Electrical Engineering. Are there any other additions or corrections?

J. Trevor Peirce is in the news along with his partners, W. G. Peirce, Jr., '24, and Charles M. Phelps '24, in an illustrated article in the *Philadelphia Inquirer* headed, "Three Men Plus One Idea Equals Success," the story of the 26-year old firm of Peirce-Phelps, Inc., one of the largest appliance and television distributors in the country. Pennsylvania's Governor Fine cut a ribbon to open the firm's third location, a new 150,000-square-foot plant on an 11-acre site along the Pennsylvania Railroad's main line in Philadelphia. The story relates that in 1925, Trev, then an account executive with N. W. Ayer and Son, visited a machine manufacturer who had been given a radio distributorship in which he was not interested. Brother Jim was persuaded to take on the radio line and he, in turn, talked classmate Charles Phelps and Trev into joining forces to buy the business, changing the name to the current one and adding other lines. Jim is president, Trev is vice-president, and Charles is secretary-treasurer. They serve some 5,000 dealers in New Jersey, Pennsylvania, and Delaware, and have branches in Harrisburg and Allentown. The new functional plant combines offices, warehouse, service school, and parts depart-

ment, engineering and installation of heating and air conditioning systems, and the showrooms.

John W. Barriger, President of the Monon, is pictured in *Railway Age* holding a model of the 100,000th freight car made for eastern railroads since World War II, as Indiana Governor Schricker signs a railroad week proclamation, referring to the actual car as a "symbol of transportation genius unmatched around the globe." Jack's railroad took the car and its exhibits of railroad progress on a tour of Indiana to show what he termed "the jeopardy in which the railroads have been placed by obsolete regulatory laws, practices and policies." Reports from Chicago say Jack's "Hospitality Special" took the members of the M.I.T. Club of Chicago on the annual week-end trip to French Lick. Donald B. McGuire is chief engineer of the Rockland Light and Power Company, Middletown, N.Y. Don, Jr., a Middlebury graduate, is married and the father of a two-year-old daughter. Janice was graduated from Wheelock. William Riley McKee is assistant cashier in charge of personnel and purchasing for the Terre Haute First National Bank, Terre Haute, Ind., and a director of the Wabash Theatres Corporation and the Chaunce Rose Home. Daughter Virginia is married and has a son and daughter. Bill, Jr., is a graduate of Rose Polytechnic Institute. Archie L. Mock of San Francisco, Calif., has retired from business. He and Mrs. Mock have one daughter, Renita Evalyn.

What's new with you?—CAROLE A. CLARKE, Secretary, International Standard Trading Corporation, 22 Thames Street, New York 6, N.Y.

## • 1923 •

First, another reminder of the date of the 30th reunion, June 11-14, 1953. The place is the Sheldon House at Pine Orchard, Conn., near New Haven. Channing P. Clapp of 210 Main Street, Matawan, N.J., is chairman of the reunion committee and will be glad to have your ideas and assistance.

The following is addressed to those who have not already responded to the two mailings which your Secretary has made to members of the Class, telling them about the reunion plans. He would like to hear from everyone, especially with the up-to-date data about your job and any address changes which are to be reported.

I mentioned in the November notes that I had heard from Felipe Diaz-Ossa, advertising director and commercial manager of Empresa Editora Zig-Zag in Santiago, Chile. His firm publishes a fleet of popular magazines. Most recently, he sent me a copy of one entitled *Para Todas*. This is a general interest magazine of the style of *Popular Mechanics*. He says that he would be happy to have from M.I.T. men any material suitable for translation and reproduction in a magazine of that type. He says he has had the pleasure of visits this year from George E. Ferreyra '23 of Cordoba, Argentina, and Horacio Serrano '24, a Chilean cattle rancher, who had been his roommate while at Technology.

The *Publisher's Weekly* for October 11 devotes several pages to five great industrial handbooks and their editors. One of



those reported on is John H. Perry, editor of *Chemical Engineers' Handbook*, of which McGraw-Hill issued a third edition in 1950. Perry does research, production, and development work with E. I. du Pont de Nemours. Since 1934, three editions of the *Handbook* have sold about 143,000 copies. Perry's specialized field of work is in sulphuric acid manufacture and in catalysis and organic syntheses at high pressures. He has served as a director of the American Institute of Chemical Engineers, on its Engineering Education Committee, and other committees.

Hugh S. Ferguson has been elected president and chief executive officer of the Dewey and Almy Chemical Company of Cambridge, to succeed Bradley Dewey '09. Ferguson is vice-president of the Alumni Association of M.I.T. and trustee of Chauncy Hall School from which he was graduated in 1919. He and Mrs. Ferguson and two sons have homes in Belmont and in Centerville.

William Webster was elected a director of the State Street Trust Company of Boston in November. He is executive vice-president and director of New England Electric System and president of the Narragansett Electric Company. From April, 1950, until July, 1951, he was chairman of the Research and Development Board of the United States Department of Defense. R. George Rincliffe, President of the Philadelphia Electric Company, was elected in October to the board of managers of the Philadelphia Saving Fund Society.

A clipping from the *Atlanta Journal* in October reports the marriage of Hugh D. Chase of Unity, Maine, to Cassie McClain of Rutledge, Ga. The ceremony was performed at the Capitol View Baptist Church in Atlanta and they expect to reside at 469 Mellview Avenue in Atlanta. Chase taught geology at the University of Maine for a number of years and is now employed with the State Highway Department in Augusta.

I heard, both through R. H. Smith of Cleveland and in an official release from the Aluminum Company of America, of the death, on November 11, of Rodney C. Rankin, chief engineer of the Aluminum Company of America's castings division. A native of Cleveland, Rankin moved to Pittsburgh in 1943. After graduation, he did graduate work at Case Institute of Applied Science and at New York University. His immediate family surviving is his wife, Dorothy R. Rankin, one daughter, Nancy, and three sons, William R., Foster A., and Rodney C. Rankin, Jr. — HORATIO BOND, *Secretary*, National Fire Protection Association, 60 Batterymarch Street, Boston 10, Mass. HOWARD F. RUSSELL, *Assistant Secretary*, Improved Risk Mutuals, South Broadway, White Plains, N.Y.

## • 1924 •

The last few weeks have been interesting ones from the standpoint of class affairs. To begin with, both our traveling secretaries turned up. Lieutenant Commander Henry F. Simonds, on a flying trip to Boston from his current duty spot at Brooklyn Navy Yard, stopped in just long

enough to say hello and then lit out to attend a Rotary meeting. Had to keep up his record. Hank says that Harold Young, who has been teaching school out in California, has retired. Put in 25 years at it. Jimmie Wong is going to do the same thing in 1955. He took off last October for a 6-month vacation in Australia where he has two boys in college. A third son is working with him in Hong Kong. Does all this retirement news make you feel as ancient as it does your Secretary? And Bill MacCallum, usually bursting with news, has run dry. Only thing of interest was one of his own current activities, that of chairman of a big traffic safety drive put on by the Los Angeles Ad Club and the National Safety Council. They have a slogan, "Courtesy is Contagious"; a queen called the "Courtesy Girl," who, from his description, sounds like the kind who causes accidents instead of preventing them; roto sections; bumper strips (I suppose a courteous bumper slogan would read, "Pardon the Bump, Please"); 24-sheet posters; the works. Sounds like an impressive campaign.

But the big feature of the past few weeks was the arrival in town of our Brazilian cohort, Adolpho Santos, fresh from a several-month European tour. Dolph is a hydroelectric engineer in São Paulo and was in France and Switzerland doing a bit of high-head turbine investigating. Coming up from New York, he stopped off to see Ed Moll for a couple of days and found Ed doing quite all right in the ceramics and glassware business. They came up to Cambridge, where Ed's son is at Harvard, for the Harvard-Yale game. Dolph is still a bachelor, so he didn't have to pick up any presents on this trip to take back to his family, but he had a whole suitcase full of perfume. Happy days in São Paulo are ahead. Leaving here early in December, he was making a leisurely trip home, with arrival in Rio scheduled for Christmas day.

Had lunch one day with Ray Lehrer while Dolph was here, and from the selling job that went on (to an eager purchaser, I might say), don't be too surprised to hear that the Lehrers are on a trip to Brazil some day. This Christmas they're heading south, but not quite that far. Just to Mexico. Incidentally, Thomas Marshall Nevin, Clarence M. Cornish, and associates will again preside over the annual M.I.T. Club Fiesta in Mexico City. Three days of joy and jollity in that Queen City south of the border, February 5, 6, and 7. And if you can't make that and are around Boston, don't forget the Midwinter Alumni Meeting on February 5 at Walker Memorial. Lots of '24 men there.

Don't suppose this has the slightest connection with the recent Washington upheaval, but Elbert C. Brown left there shortly after elections and went back home to Hartford Electric "to pick up the pieces of my own job after an interesting eight months with the Defense Electric Power Administration." Bump didn't go into detail on what he'd been doing, but did say he had seen Earle Wild a number of times. Earle is still with Commonwealth Edison in Chicago.

Another honor to Monsanto's president. Each year the University of Missouri gives

a couple of awards "for distinguished service in engineering." One of them this year went to Charles Allen Thomas, "in recognition of his several distinguished careers of leadership in research and development, in industrial statesmanship at the highest technical levels, and in learned societies devoted to scientific and engineering progress." There was a lot more, all of it impressive.

Commander of the NATO Fleet in its controversial "Exercise Mainbrace" last fall was Vice-Admiral Felix B. Stump, for the past year and a half commander of the U.S. Second Fleet in the Atlantic. Admiral Stump, a naval aviator from way back, served aboard our first carrier, the *Langley*. He got his master's degree in Aeronautical Engineering with us.

John Hancock recently named Reginald B. Miner manager of its City Mortgage Department. Miner, a Dartmouth transfer, graduated in Architecture and has been with John Hancock since 1928. From Worcester comes news that Hudson Hoagland, executive director of the Worcester Foundation for Experimental Biology, has been elected a director of Perkin Elmer Corporation in Connecticut, manufacturers of electro-optical instruments. Adman William H. Robinson, Jr., is evidently still making the rounds. Clippings from all over the country bill him as selling G.E.'s "Better Light — Better Sight" campaign to all comers.

In October, Peirce-Phelps, Inc., opened its new warehouse — all five acres of it. Jim Peirce and Charlie Phelps started selling radios from one floor of an old house in 1926. Through the years they have added all manner of household electrical equipment to their stock, now have this structure capable of "comfortably storing 50,000 TV sets, 40,000 washers and 30,000 sinks" — so the *Philadelphia Bulletin* puts it — with six adjacent acres waiting for further expansion. The *Bulletin* adds that Jim and Charlie are betting that "television is here to stay"! Another of our merchandisers has just bought the majority interest in a leading New Orleans department store. It's Sam Zerkowsky; the store is Keller-Zander. Sam stayed in Boston at Filene's until 1937, then went to New Orleans with Leon Godchaux Company, Ltd. In 1948 and 1949 he was president of the Louisiana Retailers' Association.

If you think it's a bit of a switch to find a chemical engineer in the department store business, how about this one. Eric R. Brater is assistant chief engineer, Cleveland Diesel Engine Division, General Motors. Russ Ambach forwarded a couple of notices of Eric's recent speaking engagements. The first was a talk to the local Society of Automotive Engineers section on "Development of the 16-Cylinder Vertical Radial Diesel Engine." Nothing novel about that. But how do you like this one? In November the Cleveland Society of Artists heard from Eric also; his subject: "How Ancient Egyptian Religious Beliefs Were Reflected in their Highly Developed Art and Culture and Expressed in the Building of the Great Pyramids and the Practice of Mummification." WOW!

Another classmate has passed on: John S. Farnsworth. No information, except that his death occurred in October. —

## • 1925 •

Another month and 1925 seems to be keeping extremely quiet. One news item release indicates that Albert S. Golemon, IV, of Houston was named president of the Texas Society of Architects at their 15th annual convention in El Paso, Texas. Golemon has been a practicing architect in Louisiana and Texas for the past 20 years, and during World War II he served in the armed forces, being separated as a lieutenant colonel. He is at present a partner in the Houston firm of Golemon and Rolfe and has been the architect on numerous southeast Texas projects, including the Galveston County Hospital and the Ethyl Corporation plant in Houston. His firm won the gold medal for meritorious design at the 1950 T.S.A. convention.

Charles L. Petze, Jr., II, made a visit to the Institute a few days ago but apparently his schedule was such that he didn't have a chance to talk with me. Within the past few months he has taken over a new position as chairman of the Delaware Research and Development Corporation, located in Wilmington, Del.

A couple of weeks ago, Herb Taylor, III, paid me a visit and we got together with Bill Graves '26 for luncheon. It was like old times sitting down with Herb and Bill, for they were the principal "lights out" entertainers at summer mining camp in 1924. Herb's specialties were reciting the adventures of Paul Bunyan while Billy resorted to stories of a different character. Herb had his son, John, with him, a fine appearing lad who is now a freshman at Williams College. Another son is at Miami University in Ohio, while Herb's younger son is still in secondary school. — F. LEROY FOSTER, *Secretary*, Room 5-105, M.I.T., Cambridge 39, Mass.

## • 1926 •

As I write this particular set of notes from our little spot here on the cliff at Pigeon Cove, I am forced to meditate and reflect. Those of you who read these notes regularly must note an attempt to interject a bit of New England atmosphere — many of you have remarked that you like it so I plan on continuing until the nays make themselves known. What has this to do with my meditation this winter Sunday morning? Well, it was precipitated by the lead sentence in a recent article in *Time* which stated bluntly and coldly that during the past 30 years, employment countrywide has increased 46 per cent, while in New England it has dropped 6 per cent. Frankly, the actual figures stopped me in my tracks, for this 30-year period is the approximate period we in the Class of '26 have been exposed to the business world. It may explain why most of the Class found connections and success outside New England; but don't think for an instant that any of us die-hard New Englanders who have stuck it out here will express a particle of regret at our decisions.

Flint Taylor, Fred Broughton, Don Cunningham, Abe White, Pink Salmon, Bob Davis, Al Dolben, Cedric Thompson, Cedric Valentine, Bud Wilbur, Charlie

Draper, Herb Beckwith, Pop Constantine, Dick Parsons, Stan Cheney, Johnny Searles, Bob Rogers, Charlie Rich, Warren Hamblet, Arthur Brockelman, Bill Cook, and Len Remington are a few names that come to mind quickly, who have remained in New England while the rest of the country expanded so much more.

Another classmate who stuck it out here in New England with the rest of us is Jim Killian. By now you may be wondering what your Secretary is trying to prove or defend. Cease wondering, for, as stated earlier, this is merely a morning of reflection. Other than the statistics picked out of *Time*, we have none, although there are plenty available. Probably the most impressive fact of all is the growth of our own Institute during this period. We have mentioned previously in these notes how the plant and campus has spread up and down the river since '26. We have not said much about the maintenance of leadership of the Institute in the field of engineering education, but you all know this to be a fact. Education, as a matter of fact, is one thing that has not been dependent upon nearness to markets or sources of raw materials so it has continued to thrive in New England — business, so to speak, has been good. The great exodus of the textile industry and, to a somewhat lesser degree, of the shoe industry from New England, have made a vacuum that, unfilled, would have dropped the New England employment figure much below that given in *Time*. However, not one of the Class of '26 New Englanders mentioned above has ever been directly connected with either of these industries. A couple of classmates who were connected with these industries in New England have made successful adjustments to other industries.

What has happened to fill the vacuum in New England is really phenomenal. If you were to try to park your car near one of the big old textile mills of Lawrence, Lowell, Manchester, Fall River, or New Bedford you would see what I mean. These mills are filled with hundreds of small-, medium-, and large-size companies in most diverse industries. There are manufacturers of plastics, rubber, adhesives, chemicals, electronic equipment, Fiberglas boats, artificial leather, machinery, and furniture all practically under the one tremendous roof. Bill Lowell's outfit, Sylvania, for example, operates a plant in a former textile plant at Ipswich which is where Bill makes his headquarters. I can think of countless other M.I.T. men who operate businesses in sections of former textile plants. This has produced a stability hitherto unknown in New England textile centers and has helped to maintain an industrial *status quo* in New England without which many of us, who preferred to stay in New England during this period since 1926, would have had difficulty.

All of you have driven though New England and are familiar with the stone fences now covered with moss and showing the effects of age and weather. Some pioneer rolled those stones out of his fields so that he could grow something to eat, and these stone fences are quite expressive of the New England tradition. So, if

we continue to flavor the class notes with New England lore it's because we like the place, even though we have to roll stones out of our fields. We feel that since New England has performed such a remarkable job of readjustment in view of industrial shifts, it now stands on a stable threshold for future development.

One of our repatriated New Englanders, Jack Larkin, recently mentioned that Dick Whiting had been in town to pick up his mother who was returning with him to Washington. Jack seemed to think that Dick was visually showing his success as a patent attorney by putting on a little weight. If you wish to deny this Dick, I have an excellent "out" for you — Jack is wearing his first glasses, bifocals at that. Jack has been the envy of many of us for years with his slim, streamlined, no-gray-hair appearance but now he is catching up — at least with the spectacles — and to hear him fuss about them one would think he had acquired a wooden leg. During the football season, Jack and his wife met the Mark Greers and Bill Forresters in Hartford and proceeded to the Dartmouth-Yale game where a good time was had by all. And of all news to get by the back door from Jack — Bull Roberts is now working for none other than E. I. du Pont de Nemours and Company, Inc., in Wilmington, Del., as a metallurgical consultant. We are sure glad to have you settled back in the United States, Bull, after so many years in Chile.

Recently, your Secretary spent the night at the Colonial Hotel in Claremont, N.H., and since Joy Manufacturing Company has a plant in town, a check was made on the behavior of classmates Drain and Mancha, Vice-presidents of Joy. Brownie, who owns the hotel, reported that Jim Drain and his wife had been in about a year ago but that Ray Mancha had only been around a couple of times in five years. Deportment was reported to be excellent in each case.

The clipping services brought in a large write-up this month from the *Iraq Times* in Bagdad which I certainly expected would be about one of our oil industry classmates such as Dave Shepard. The heading was: "The Man with a Mission — The Perpetual Calendar." Yes, it was Bill Edwards who was on a globe-circling tour to propagate his calendar which we have mentioned many times in this column. The article stated that Bill still makes his home in Honolulu, where he is an electrical engineer, and it gave the complete story on the calendar. A couple of issues back I mentioned that Ben Howe had written for Dick Plummer's address in Mexico City. A recent letter from Ben from Mexico City explains all. Ben goes to Acapulco every winter and plans to build a winter home there. He points out that it would be an excellent place for a '26 reunion: temperature 78 degrees F. all winter, good fishing, sailing, water skiing, hunting, and rum for \$3.00 a gallon. When Ben wrote, he had not seen Dick Plummer but planned to meet him and Carlos Arellano the next day.

Last month we told you that an important announcement would be forthcoming on our 30th reunion. After consultation with our other class officers, Pink Salmon,



Treasurer, and Dave Shepard, President, it was decided to ask a member of the Class who has been active in every reunion organization since graduation to become chairman of the 30th. We asked and he has accepted! Cedric Valentine is to run our next reunion and those of us who have worked with Val in the past can report highly on his conscientious ability. The reunion is in good hands. Also we have a tentative reservation — firm reservations cannot be made so far in advance; but the Oyster Harbors Club at Osterville on the Cape has our name on the preferred list. They also have the Class of '16 on the list but it is a large place, capable of handling both classes. I think we are pretty safe in saying that the best enjoyed spot for any of our reunions was at Osterville when we went to the Wianno Club for our 20th, but, unfortunately, Wianno does not open early enough for current reunion dates. Oyster Harbors is a grand place and a nice spot to be looking forward to for 1956.

We still do not receive enough letters from members of the Class, so unless you want your Secretary to improvise with stories about New England stone walls, and so on, I'd suggest that you get out the pencil and paper and write a short note about your activities. We will be happy and interested to hear from you. — GEORGE WARREN SMITH, *General Secretary*, E. I. du Pont de Nemours and Company, Inc., Room 1420, 140 Federal Street, Boston, Mass.

## • 1927 •

A recent clipping from the Boston Sunday *Globe* announces the promotion of Cornelius E. Ryan (stationed in Korea) to the rank of major general. He is chief of the Korean military advisory group and is given credit for building up the Republic of Korea Army after the outbreak of hostilities.

At a recent conference of art and architecture leaders in St. Louis, Edward D. Stone urged the raising of the popular level of appreciation: "Beautifying America would have a dollars-and-cents value beyond public comprehension." Stone, co-designer of New York's Museum of Modern Art., was on his way to Kansas City to deliver the keynote address before a regional American Institute of Architects conference on the need for collaboration of architect and artist. "Architects have a social obligation to provide for products of sculptors, painters and landscape artists. City planners must not envision boulevards without parkways nor highways without trees. If we don't watch out, pretty soon our only Sunday diversion will be driving in our lemon-colored convertibles to view nothing but used car lots, filling stations and fields full of empty beer cans, as an English visitor once predicted."

Last year we told you that Robert de Luccia was employed by the Pacific Power and Light Company of Portland to be chief engineer for the \$26,450,000 hydroelectric project on the Lewis River in Oregon. Just about a year ago the project was started — all that has to be done now is to put the finishing touches on the sensitive machinery and flush the eager

waters through the 22-ton water wheels with a twist of the wrist. Yale Dam, as it is called, cost a third as much as Bonneville Dam, yet it will have a capacity of 218,000 kilowatts, which is more than a third of the Bonneville capacity. Government engineers had estimated that a concrete dam similar to Bonneville would cost 60 million dollars and take three years to build. De Luccia, basing his estimate on his New England experience and the studies of engineers in the mountains of Italy, figured that an adequate dirt dam would cost 30 million dollars and could be completed in one year.

Word has reached us that a mathematics professor with four college degrees is a fellow of the Academy of Magical Arts and Sciences, and will entertain members of the Springfield Kiwanis Club at their weekly luncheon meeting this Wednesday. William F. Cheney, Professor of Mathematics at the University of Connecticut since 1930, is a well-known professional magician and is a member of several societies for magicians. — JOSEPH S. HARRIS, *General Secretary*, Shell Oil Company, Aviation Department, 50 West 50th Street, New York 20, N.Y.

## • 1931 •

News continues to be scarce, and it has taken news clippings for two months to make up this report. One news item that is late but should not be overlooked concerns Arthur Stoner of Course II. On October 15, 1952, he was formally presented the Certificate of Merit, an award given by the Franklin Institute of the state of Pennsylvania. The award was made in recognition of his development of a chuck and collet combination for lathes, to hold cylindrical work being machined. After graduation, Arthur started work in his family's business, the Jacobs Manufacturing Company. In 1936, he became chief engineer and devoted much of his time to research and development. In 1944, he became vice-president in charge of engineering, and at that time relinquished his routine engineering work in order to concentrate on research and development. His 60 patents and the recent award are evidence that his time has been well spent.

A news note from Chicago infers that Christopher Chamales, IV, is contemplating marriage. Since leaving the Institute, he has studied at Fontainebleau and at the Cranbrook Academy of Art. Concentrating in the field of city planning, he has prepared master city plans for Athens and its port, Piraeus.

John Swanton dropped in the other day, en route to one of his meetings with Chick Kane '24. John has done a fine job of announcements for the Alumni Fund and I hope you keep his message in mind. He had quite a story to tell about his cross-country vacation trip. Quite a few of the Class are in this area but seldom do they get to Cambridge. In Worcester, a few weeks ago, your Secretary met Lester MacFarland, I, who is working with the Public Housing Authority. He has an interesting job.

Keep the news coming and it will appear here. — AUGUST L. HESSELSCHWERDT,

Jr., *Secretary-Treasurer*, Room 3-242, M.I.T., Cambridge 39, Mass.

## • 1932 •

This job of being Class Secretary is not such a bad assignment. It is really lots of fun to go over bits of information on our old associates. Of course, you realize this is primarily a build up for the fellow who has to take this job over at the 25th reunion!

Earl Anderton moved to the Far West last June, which he says is the only reason for not making our reunion. Gump is plant manager of Scott Paper Company's Coos Bay Pulp Corporation at Empire, Ore. He has moved to a wonderful country, which I am sure his wife, Sally Brooks, and their two children, Hope, 10, and Brooks, five, will thoroughly enjoy. After leaving Tech, Gump spent some time at the Institute of Paper Chemistry, Appleton, Wis., before joining Scott. He served during the war as lieutenant commander in the Navy. He spends his spare time skiing, sailing, and playing golf.

Cecil Boling is a busy fellow running two companies, Bush Manufacturing Company in West Hartford, Conn., and the Heat-X-Changer Company, Brewster, N.Y., which manufacture heat transfer equipment. Zeke is a farmer on the side, with a gentlemanly address: The Field Farm, Brewster, New York. We presume he is bringing up his three children — Joanne, 15, Suzzane, 11, and Cecil Eugene, 8 — to milk the cows and win the local 4-H trophies. We hope Zeke will find time to come to our 25th.

Speaking of the 25th, Phil Boothby has given our Reunion Committee the devil for moving the meeting spot away from Boston. He has put up an excellent argument, and I am glad to report, for those who agree with P.T., that we are definitely planning on being in the Boston territory for the 25th. P.T. is head of the Design Division, Public Works Department of the Navy. He reports there is often some confusion in distinguishing his head from a billiard ball. On a second look at P.T.'s notes, it develops that the confusion relates to the Navy and not to his thinking equipment. He waited a while to take the fatal leap, marrying Luella Sherman in 1941. They have two children, Susan, three years, and Janet, two years, and live on the Post Road, North Hampton, N.H.

Churchill Condie is also a farmer of parts, living at Grandview Farm, Sappington, Mo. Monk is supervisor of equipment and plant expansion with the Granite City Steel Company, Granite City, Ill. He married Louise McCormack five years ago and has a daughter, three.

For those who haven't seen him lately, I can report from close observation that John Crowther is still as irrepressible as ever. The Stauffer Chemical Company, for whom he has labored diligently for many years as director of research, finally decided to give his talents full play and has made him director of sales, so doubtless those of you who buy heavy chemicals will be asked to give up your faithful suppliers of many generations for the sake of the old school tie. John says he got 102 degrees at the School of Hard Knocks

after leaving M.I.T. He got a good break when he married Nancy Parent in 1937. They have three children, Beverly, 13, Jack, 10 and Prudence, 4, and live at 384 Sound Beach Avenue, Old Greenwich, Conn. John did a yeoman job during the war. He was with the 8th Army in the E.T.O. from 1942 to 1944, spending the last two years in Washington with the 20th, and coming out a major. We will see and hear him at the 25th.

Sidney Edelstein is back in the news as president of the Dexter Chemical Corporation, manufacturer of specialties for the textile industry. With his wife, Mildred Citron, and daughter, Ruth, he lives at 11 Salem Park, Elizabeth, N.J. Sid has numerous publications and patents in the textile and chemical fields to his credit and is the founder of an outstanding collection of great works, documents, and letters in the history of chemistry and related sciences. He has been secretary of the Division of History of Chemistry of the American Chemical Society for a number of years.

John Allen Finnerty is a manufacturers representative for heating, ventilating, and air-conditioning equipment, living with his wife, Dorothy A. Linehan, at 67 Old Colony Road, Wellesley Hills, Mass. He was a major in the Army during the war. There is a rumor that he has turned into one of the good class golfers, which is what you would expect of a good peddler.

Freeman Fraim continues to prosper with his textile business. He is treasurer of Essex Mills, Inc., Essex, Conn. Free married Barbara Lyon in 1934, one of those Wellesley girls, and they have four children: Janis, 15, Freeman, Jr., 12, and twins, Thomas and Ernest, 7. Having twins of the same age myself I know that Free's time isn't so free, but it is a lot of fun and I am sure we can both recommend it to any of you fellows.

Though this is a month late, your Secretariat wishes all of you a very happy and prosperous 1953. I hope some of you will sit down sometime during the year and drop me a line and tell me what you are up to and if there is a torch we can carry for you in this column. — ROBERT B. SEMPLE, *Secretary*, Box 111, Wyandotte, Mich. *Assistant Secretaries*: WILLIAM H. BARKER, 45 Merideth Drive, Cranston, R.I.; ROLF ELIASSEN, Room 1-153, M.I.T., Cambridge 39, Mass.

## • 1937 •

The last time we got together I promised to find out more about Jack Robbins' new position at the Calco Chemical Company, Division of American Cyanamid located at Bound Brook, N.J. He was made superintendent of the coal chemicals refining operations at the Bound Brook plant. Jack had a narrow escape last spring when an appendicitis attack was not recognized until almost too late. The ensuing complications and aftermath caused him to miss our 15th reunion, much to his disappointment and ours.

Jerry Salny's marvelous campaign has prodded many into writing for *The Review* for the first time. Paul Vogel is having a wonderful time for himself in Westport, Conn., but let's listen to Paul

himself: "Immediately after graduating, I joined Standard and Poors Corporation of New York City where I became an analyst of chemical and metal securities, industries and commodities. After obtaining a desired background in Wall Street practices, I decided that I needed production experience and joined the Du Pont organization in May, 1941. My initial years with Du Pont were at the Cellophane Plant in Buffalo, N.Y., first as a methods and standards engineer and then as a control assistant. During these war years I also acted as secretary of the Conservation and Suggestion Committee for the Buffalo plant. In late '44, I was transferred to Wilmington to become a sales analyst in the same division.

Uncle Sam requested my services in the spring of '45, and I became a radar technician in the Navy. However, my service was limited to only one year. In May, '46, I joined the Hartford-Empire Company, now Emhart Manufacturing Company in Hartford, Conn., as a combined industrial engineer and market analyst for the company, a manufacturer of glass container machinery. In '47, I was appointed market research director. My efforts were directed toward reorganization of the company, an experience which proved most interesting and valuable. In the summer of '49, I was transferred to a subsidiary company, the Plax Corporation, having completed a detailed market survey on plastic bottles which this subsidiary had developed. As bottle sales manager, I had a fascinating time in helping to develop a market for this now rather famous product. Finding that I preferred market research and staff work to sales, I sought employment in this field and in October, '51, became market research director for the General Chemical Division of Allied Chemical and Dye Corporation.

"Unlike most college boys, I married, in June, '40, my college sweetheart, Frances Wish. Since then we have accumulated two children, Rowen, aged 11, and BJ (Betty Joan), aged eight, two cars (both of ancient vintage), one cat, one dog, two rabbits, and two ducks, all thriving in Westport, Conn. Extracurricular activities have been confined largely to Unitarian Church work. At present, I am vice-president of the Rowe Camp Corporation, a Unitarian young peoples' camp. Recently, I have been instrumental in starting a new Unitarian Church in Fairfield County, Conn., and am acting as its present chairman." Thanks, Paul. Sounds like a very interesting life.

Vice-Admiral Harold G. Bowen has recently cosponsored the Fourth Edison Foundation Institute to explore ways and means for industry and education to work together at the elementary and secondary school levels to enable students to obtain a basic understanding of our industrial economy and its international impact, the fundamental role played by engineering and science in that economy, and the need to encourage more high school students to choose careers in engineering and science. This sounds like a very worthwhile project and one which could well stand duplicating throughout our country.

I see by the clippings that John J. Hanlon is technical director of the Mohawk Carpet Mills in New York. After school he spent a brief period with a fuel research and development company, then returned to M.I.T. to work in the color measurements lab under Arthur C. Hardy '18, developer of the recording spectrophotometer. In '39 he joined the Mohawk Carpet Mills, Inc., as a color technologist in charge of the Color Measurements Laboratory. In '42 he went to the Test Laboratory of the Philadelphia Navy Yard where he set up a section for color measurements using the G.E. recording spectrophotometer. In '43 he received a commission in the U.S. Naval Reserve and served overseas as officer-in-charge of a naval mine detail. After the war, John returned to Mohawk where for six years he worked in the dyeing department, first as assistant superintendent of dyeing and then as superintendent. Last December he was appointed to his present post of technical director of the mill. He has served as chairman of the Hudson-Mohawk section.

A great many of you will remember Frank MacDonald who came to us as a civil engineer and graduated with us in the Public Health Engineering Course. He is now back with his alma mater, Tulane University, in New Orleans, La., as an associate professor of civil engineering. He began his career in '31 with a Chicago bridge construction company and followed this work as construction engineer with the Glover Company of New Orleans, and with the U.S. Engineers. Then he went on to Honduras as a railroad construction engineer with the United Fruit Company. "And that's when I became an engineer; the company placed a great deal of responsibility on their young engineers, not only professional responsibility but administrative. I was placed in charge of 18 miles of bridge construction which entailed selection of location, construction of 12 railroad bridges, supervision of 300 natives, ordering all construction material and provision — 150 miles from the nearest port." Following this experience he served with the Louisiana State Board of Health, and in '42 joined the U.S. Public Health Service until '45, when he became a professor at Tulane. He is quite active in local and national engineering societies, and I am sure that he would welcome a visit from any of you in that area.

Leonard Seder was the keynote speaker at a quality control meeting in New Haven on November 19, and discussed the possibility of saving millions of dollars worth of products lost annually because industry at times does not recognize the importance of preventing defects by adequate quality control methods. He is with the Gillette Safety Razor Company and is a consultant to the Boston Ordnance District. Only one engagement to report this month — that of G. B. Hunter, Jr., whom many of you will remember as George B., and who now sports an M.D. from Johns Hopkins, to Elizabeth Jean Zidik of Reading, Pa. The wedding will be on January 31 in Washington, D.C., where the good doctor is now living. (Come to think of it, the ceremony will



have been by the time you read this, which should be some time in February.)

Thanks, fellows. See you next month with more events from here and there, some of which may be gathered during the next two weeks when the Florida sunshine will limber up my writing arm and sweep out some of the cobwebs. The whole family is taking off this coming Saturday, which is December 20, for a two-week jaunt to the Florida Coast, more particularly Miami. — WINTHROP A. JOHNS, *Secretary*, 34 Mali Drive, North Plainfield, N.J.

## • 1938 •

Usually the notice from The Review Office warning of our deadline is quite routine. This month's was different enough to be worth putting on the record: "The Class Notes Editor enters a plea to have notes sent in on time this month, because of (1) Christmas-New Year holiday tie-up; and (2) a temporary bit of personnel scrambling because of her marriage on December 21. Any co-operation on the deadline will be greatly appreciated."

A news release tells us Howard E. Milius, formerly a member of the Sales Department of the Antara Chemicals Division of General Dyestuff Corporation, has joined Humphrey-Wilkinson, Inc., chemical manufacturers, North Haven, Conn., as sales manager. Howard was engaged in explosives production in the Repauno Works of Du Pont during World War II and subsequently became chemical supervisor in that company's Grasselli Works. His work with Antara included product development and sales.

Don Severance supplies the information that Dick Henderson has left the University of Syracuse where he was associate professor in their Biology Department, to accept the position of technical service representative, Special Products Division, the Borden Company, New York City. Products of that division include animal feed supplements, products for the ice cream industry, infant formulas for special and routine feeding, and so on. His new home: New Canaan, Conn. As many of you know, Don has been busy sending out cards seeking news and reminding you of the 15th reunion. The balance of this month's notes consists of excerpts from replies. We wish to extend our sympathy to Dave Beaman who writes: "Still working as project engineer on development contract work with Daystrom Electric Corporation. The alumni records apparently have not been corrected since the company changed its name from Frederick Hart and Company. Since my wife died about a year ago, my five children and I have been getting along fairly well — considering. My mother acted as housekeeper at first. Since last spring we had a very fine woman, but she has had to leave, so I'm looking again."

Horace Homer: "I am still with Sylvia Electric as a research engineer in fluorescent lamps. My main field is lamp phosphors (development and application), but the side issues are many and varied. Most of my work is of the company confidential variety and does not get published, but I did manage to coauthor one

paper for the American Physical Society on the cathode coating which tripled the life of fluodescent lamps. Still living in Arlington where I have one house, one wife, one son, and one dog. I could use a few more of the latter two. Manage to keep busy in my spare time with civic affairs and my main avocation of scouting. Reached the climax of that last year with the award of the Silver Beaver. Am planning to make it for the 15th." Clint Tylee: "Still a good Vermonter after 11 years in this wonderful state. Want to see those M.I.T. glass boats as I have one myself — no competition up here though." Vera Wochos (for Wenzel): "We are definitely planning on attending the 15th. Wenzel is managing Plant 2 of the Elgin Watch factory — an ordnance plant (for your class notes). If the weather is bad, we probably will miss the reunion, since we plan on flying out in our plane."

Ted Burke: "Seem to be going West, though I'm not so young anymore. Moved to St. Louis two years ago — connected with Great Lakes Carbon as general sales manager. We're selling coke and coal chemicals, and having fun as well as headaches doing it." Phil Sellers: "Was made sales manager of Fischer and Porter Company (Flowrators) in July. Now work in Hatboro, Pa., and live in New Hope. Planning to take part in 15th reunion." Earle MacLeod: "I am starting my eighth year with Carrier Corporation in Syracuse, N.Y. Am chief engineer of the Ice Cube Maker and Milk Cooler Department. Have just been appointed to serve on an Ice Maker Standards Committee for the American Society of Refrigerating Engineers. Am also preparing an article on 'Automatic Ice Makers' for *Refrigerating Engineering*. Peg and I will soon be celebrating our first wedding anniversary. No family yet."

Russ Coile: "Bill Whitmore and I are in Washington in M.I.T.'s Operations Evaluation Group. I have recently returned from eight months in the Mediterranean with the American Sixth Fleet. *Electronic Engineering* in London recently accepted a couple of nomographic papers for publication soon, and I have a paper in the December *Journal of Documentation* (London) similar to some work I did earlier on electronic literature in the December, 1950, *Proceedings of the I.R.E.*" Howard Lawrence: "Not much news here, except more business than ever. I am still at RCA-Victor, in aviation equipment engineering, manager of our fighter radar and long-range navigation activities. If you know of any good electronic engineers that I can latch on to, give them my name. We have some interesting work." George Wood: "Now chief of the Development Division at Naval Underwater Ordnance Station, Newport, R.I."

Mert Barrows: "There isn't much news worth telling you about me. I just keep busy as a one-armed paper hanger designing houses and trying to get them built for about one-half what the prices seem to be." Joe D'Angelo: "Here are some high lights on my present status: I am married and have two children. After being discharged from the Army in 1948, I rejoined Reichhold Chemicals, Inc., man-

ufacturers of synthetic resins and allied chemicals. My present position is plant manager of our Elizabeth, N.J., plant. I hope to make the 15th reunion on June 13 and 14, but I am not yet certain." Thijs Boissevain: "Still working for the Electric Boat Division of the General Dynamics Corporation, Groton, Conn., which is a regular hotbed of M.I.T. graduates. Wife and four children (two of each kind) are still living on our Massachusetts farm. Connecticut land wouldn't be worth the asking price if it had oil or uranium. Hope I can make the reunion but don't have time to spit."

Gordon Foote: "We are still at Procter and Gamble. Recruiting technical personnel at present. Four children: Margaret, 10½, Tom, 9, Roger, 5, Gordon, Jr., 6 months. Gordon, Jr. (Gil), was born May 25." Dale Morgan: "Glad to see the drive for class news. Hope you get a big response. Saw several '38 classmates at the M.I.T. New York Club beer party this fall. Bert Grosselinger is still traveling back and forth to Europe in connection with his job. Harold James is practicing patent law, although I don't know what his specialty is. I am with Carbide as sales manager of activated carbon and run into many M.I.T. men at conventions and in the course of everyday business. Am looking forward to our 15th reunion and a chance to see all the new things that we hear have happened to the Institute. — ALBERT O. WILSON, JR., *General Secretary*, 24 Bennington Road, Lexington 73, Mass. *Assistant Secretaries*: DAVID E. ACKER, 210 Woburn Street, Lexington 73, Mass.; FREDERICK J. KOLB, JR., 211 Oak Ridge Drive, Rochester 12, N.Y.; RICHARD MUTHER, 116 West 67th Terrace, Kansas City, Mo.

## • 1940 •

Dick MacPhaul sent your Secretary a brief note this past month enclosing a check of \$2.50 for class dues through the reunion in 1955. With this latest contribution, the class account in the First Federal Savings and Loan Association of Washington, D.C., amounted to \$939.29 on December 8, 1952. The following is also from Dick: "Read in a recent New York Times where Parnell got himself engaged. Guess after I got married he hated to be the last bachelor from the Student House class of '40 grads."

Bob Lundgren became fuel supply director of the Detroit Edison Company on December 1. Bob went with Detroit Edison's Sales Department after graduation from Tech. In 1947 he was transferred to the Purchasing Department as assistant fuel agent, and, in 1952, he was advanced to assistant fuel supply director. Colonel Giles Evans, Jr., who until recently was serving in Korea, has been assigned to the position of assistant engineer commissioner in Washington, D.C. Jane Hastings, who is on the laboratory staff of the General Electric Company in Pittsfield, Mass., has been elected chairman of the Connecticut Valley section of the American Chemical Society, effective January 1. George Lof recently resigned as director of the Institute of Industrial Research at Denver University and as chairman of the university's Chemical Engineering Department to enter private business. George is one of

the pioneers in the development of solar heating for residential and industrial heating. He plans to serve in a consulting capacity for several chemical producing and processing firms in the Rocky Mountain region. Lots of luck in your new undertaking, George.

One engagement and one wedding to report this month. Elizabeth Kemmerer Tillson and John Parnell are the engaged couple, while Joan Ann Haumersen and Frank J. O'Neil were married on November 15. And that winds up another '40 column, except for one personal note. At present we are adding a garage and porch to our house and finishing our second bathroom, three items left undone when we built three years ago. It has been a lot of fun watching our home grow from just a vacant lot to its present state of near-completion. Don't forget to write to Al and help make the '40 notes full of interesting items. — ALVIN GUTTAG, *General Secretary*, 7114 Marion Lane, Bethesda 14, Md. MARSHALL D. MCCUEN, *Assistant Secretary*, Oldsmobile Division, General Motors Corporation, Lansing 21, Mich.

## • 1941 •

Andrew Caramihas and Florence Pechilis were married in Brockton on November 17, and, after a wedding trip to Bermuda, are living in Bridgeport, Conn., where he is a staff engineer with the Sikorsky Division of the United Aircraft Corporation. Mrs. Caramihas is a graduate of Lasell Junior College. Best wishes to you both.

Other news is nonexistent this month, except for the usual number of address changes: William L. Babcock, 44 Foch Avenue, Sayreville, N.J.; Ralph P. Baker, 60 East Fifth Street, Corning, N.Y.; Richard E. Brainard, 51 Wellington Road, Livingston, N.J.; Leon Crane, 38 Ashley Road, Newton Square, Pa.; Walter M. Ennis, R.F.D. No. 1, Concord, Mass.; Raymond A. Frigon, United Nations, Room 2505, Box 20, Grand Central Post Office, New York, N.Y.; Theodore H. Guething, 581 Lake Park, Birmingham, Mich.; Clifford H. Hahn, 51 Olney Road, Wethersfield 9, Conn.; Herbert D. Klein, 82 Plymouth Avenue, Swampscott, Mass.; John W. Ludwig, 2447 South Llewellyn Street, Dallas 8, Texas; John H. Macleod, 1725 Van Antwerp Road, Schenectady, N.Y.; Rollins H. Mayer, Rua Mococa, Sumare, São Paulo, Brazil; Frank J. Storm, Box 1983, Amarillo, Texas; Stanley E. Webber, General Electric Company, Research Laboratory, Schenectady, N.Y. — IVOR W. COLLINS, *General Secretary*, 28 Sherman Road, Greenwood, Mass. JOHAN M. ANDERSEN, *Assistant Secretary*, Saddle Hill Farm, Hopkinton, Mass.

## • 1942 •

As you read these notes, winter undoubtedly is in full swing, although they have been written in the throes of the Christmas season when everyone feels more like relaxing and celebrating, and Boston has had only one very small snowfall. By February, too, Ken Rosett will be back in the country. We thought you would be interested in another chapter of his travels and activities with the Air Force

in Europe, written on October 26 in Wiesbaden, Germany:

"Well here we are again. Summer is over; Johnny has learned to walk (and it's about time, he's 16 months old); Mixa the dachshund has grown, she's now two dogs long and half a dog high; and Nancy is going to kindergarten. The kindergarten is a half day session and there are two shifts, one in the morning and one in the afternoon. Each shift has 80 or 90 pupils divided into four classes. It is easy to see that a lot of Air Force families were started after the war, in '45 and '46. Nancy doesn't think too much of two of the teachers because they came from the United States and don't even know any German! Got a week's leave the end of August and took a trip through Bavaria and over into Austria. Our first stop was at Garmish, which is an old town about 60 miles south of Munich on the German-Austrian border across from Innsbruck. During the Middle Ages one of the principal overland trade routes from India to Europe ran through Bolzano, Italy, to the Brenner Pass and thence up to Garmish and to Augsburg and Nuremberg. The twin towns of Garmish and Partenkirchen are in a valley surrounded by Bavarian Alpen peaks. They are truly beautiful spots with old houses having gaily painted murals on the outside walls, picturesque architecture, hand-carved beams, eaves, and decorations, and narrow winding old streets.

"Saw King Ludwig's castle at Linderhof. It is a copy of the Petit Trianon at Versailles and is completely done up in gold leaf with appropriate marble statuary and rococo furnishings. The castle is surrounded by formal French gardens with grottos, waterfalls, ponds, fountains, and terraces. All in all, it is quite a production. We went up to the summit of the Zugspitz, which is the tallest mountain in the Bavarian Alps, about 2,900 meters high. The first part of the trip was on a cog train making about 9 kilometers an hour up a 26 per cent grade. From there we took a short cable car ride to the summit. The mountain rises above a valley and a large lake called Eibsee, and the view from the top was terrific.

"For Nancy, the high points of this part of the trip were the cog train and cable car rides. Drove from Garmish through Bad Tolz to Berchtesgaden, famed as the location of Hitler's country place. His house, or chalet, was called 'Berghof' and was the site of some of the important pre-World War II conferences of the 'Peace in our Time' statesmen. Looking back from here that era seems to be decades ago. Hitler and Bormann and Goring had houses in the same area, actually in Obersalzberg. The whole area was bombed by the Allies in '45 and then burned by the S.S. troops. Salzburg, of course, means 'salt mountain' and the biggest salt mines in Germany are located there. Went on a very interesting tour through the mines. Wore miners costumes, rode on the train that takes the miners through the tunnels and galleries, slid down miners chutes and had a boat ride on an underground salt lake. The day was very hot but the mines were cool because of some forced circulation of air

from natural air conditioning. Drove down through the Brenner Pass to Northern Italy for lunch one day and spent another day over in Austria at Salzburg. That is the Music Festival town, and a statue of the town's patron, Mozart, can be found right in the middle of the square, incidentally also in front of the headquarters of U. S. Forces in Austria. Salzburg, especially during the festival season, is quite a tourist town with lots of shops and castles and guided tours. Got Jean some very pretty petit point earrings there.

"After we left Berchtesgaden we visited another of King Ludwig's castles, this one on an island in a huge lake near Munich. The castle, called Herrenchiemsee, is a replica of the center portion of the palace at Versailles. Ludwig was an ardent admirer of French royalty in general and of Louis XIV in particular, and all the furnishings and decorations in his castles are patterned after the French. He also had some typically un-French conveniences, as a dining room table on an elevator which dropped through the dining room floor to the kitchen, thus keeping the servants out of sight, and an indoor swimming pool connected to his bedroom by a secret stairway."

Names in this month's news include Major Bernard J. Driscoll. Bernie has just been appointed to the Advisory Group for Aeronautical Research and Development of the North Atlantic Treaty Organization. Our informant tells us that Bernie will be headquartered in Paris! His path to Europe has been by way of the Air Force Scientific Advisory Board as executive secretary, and, before that, assistant professor of Air Transportation at the University of Southern California. Good luck, Bernie, and good times!

We have also received an announcement that Henry A. Hill, who received his doctorate in organic chemistry with us, has been appointed assistant manager of National Polychemicals, Inc., at Boston.

The Alumni Register advises that Captain John S. Arend has moved to Lake Charles, La.; Lieutenant Commander John B. Jorgensen is now stationed at Sunford, Fla.; Commander Bernard A. Smith at Arlington, Va.; John D. Allan has moved to Brandon, Manitoba, Canada; Thomas R. Carrington, Jr., to Bristol, Conn.; Clinton D. Cook, Jr., to Burlington, Vt.; William Devine, Jr., to Silver Spring, Md.; Gordon H. Hill to Dayton, Ohio; James A. Knowlton, Jr., to Milwaukee, Wis.; David B. Mitchell to Waynesboro, Va.; Sutton Monro to Maplewood, N.J.; and Eric M. Wormser to Darien, Conn. — LOUIS ROSENBLUM, *Secretary*, Polaroid Corporation, 730 Main Street, Cambridge 39, Mass.

## • 1943 •

Our big news this month continues to be about the forthcoming 10th reunion, which is only four and one-half months away. The many cards which have already been received at reunion headquarters are indicative of a very good turnout for the big affair at the Mayflower Hotel in Plymouth, Mass. We know you won't forget the dates, June 12 to 14, but just to be sure, why not jot it down on your desk



calender right now. And to those of you who haven't already sent in your return post cards, indicating your intentions about attending the reunion, a gentle reminder that now is a good time to fill out the cards and mail them in — pronto.

Within a few weeks you will receive further news about events planned for the reunion week end, and also an up-to-date list of all who are planning to attend. To place your name on this formidable list, all you have to do is return your card.

From Ansonia, Conn., we have news of the engagement of Claire Susanne Stolzenberg of that town, to Warren Paul Manger. Miss Stolzenberg is a graduate of Lasell Junior College. Warren, who is a Course II graduate, received a master's degree and a Ph.D. in Mathematics at the Institute, and is with the Farrel-Birmingham Company.

Bill Verrochi, whom we remember well for his rough and tumble hockey playing at Tech, has settled down to something less dangerous. He is very active in singing in church choirs around Boston, and has been concentrating on his study of the piano. Bill is a project engineer with Jackson and Moreland, engineers, in Boston. We also have word of Leo Duval of Beverly, Mass., who recently announced the opening of his own lighting fixture business in Boston.

We wish we had more news to write about, but, alas, it seems that the Christmas rush has passed us by. We hope it is only modesty which restrains a more prolific outpouring of your comings and goings which would be of such great interest to your classmates who read these notes. We shudder with the anticipation of finding ourselves in the position of our good friend and adviser, Azel Mack, Secretary of the Class of 1915, who, in his concluding sentences of two full pages of class notes in both the November and December issues of *The Review* writes heart-rendering pleas for help — help for more news! Many of you have received cards asking for news, and the responses should be coming in fast. It takes only a few minutes to write, and your Acting Secretary loves to receive mail.

One last word about a worthy cause, affectionately known as the big touch, which is, of course, class dues. Prexy Dick Childerhose's letter about dues was certainly gentle enough, so let's send in that little white envelope if you haven't already done so. In rereading what is written above, your reporter has realized that class reunion headquarters can expect to receive over 2,000 pieces of mail within a few days if every one of you responds to all the requests. We look forward to the deluge. — RICHARD M. FEINGOLD, *Acting Secretary*, 49 Pearl Street, Hartford 3, Conn.

## • 2-46 •

As a result of the class elections last spring, these notes are now being written by a new hand, with welcome assistance from Herb Hansell on this issue. Jim Craig, our previous secretary, was elevated to the Class Council by the electorate, and yours truly has replaced him. I hope I can do as fine a job as Jim did,

and I hope you will keep sending in those letters. Let's have all the news about you and your doings. Send me your news at 5 Martha's Point Road, Concord, Mass., or send it to the Alumni Association at M.I.T. to be forwarded to me.

The other results of the class elections were the election of Glen Dorflinger, Ted Heuchling, George Ley, and Howie Perlmuter as the other members of the Class Council, and Herb Hansell was re-elected president. And to fill in the record on the elections, the nominations were made by Roger Bart, Marshall Corbett, Stu Edgerly, George Ley, and Marshall Tulin, and George Bott, Ed Brylawski, and Jim Goldstein counted votes.

Questionnaires, which came in with the votes, reported lots of news. Starting with the marriages, Dave Hoag and Grace Griffith of Manchester, Vt., were married on May 10, 1952, and are now living in Ashland, Mass.; Seward Kennedy, who is now practicing law in New York City (at 1 Wall Street!) married Suzanne Dunn of New York last February; Waller Conrad advises of his marriage to Doris Emerson of Cleveland last Christmas; Bob Nelson, who was released from active Navy duty in October, found a Navy mate in Ensign Marianne Schoeffel last May; Martin Ray married Genny Pruett of Pensacola, Fla., last September and reports that he is now a chemical supervisor in charge of "tall oil processing"; a long note from Richard Steele reports that he married Martha Jean Micko of East Chicago, Ind., in 1950, is the father of two children, 19 and five months of age, respectively, and was recalled to active Naval duty in May of this year; and Ed Potter says it's about time he notified us of his marriage to Marjorie Jeanne (that is her last name) of Mount Vernon, N.Y., in August, 1950, and the birth of his son, Donald Bruce, in March of this year. Ed is making naval aircraft in Upper Darby, Pa., and says that he has seen Ted Hawkes in Brooklyn every so often.

The number of family additions to report shows a bumper crop, and we'll combine them with news of the proud papas and mamas. George Bott, on the D.I.C. staff at the Institute, but currently in Washington, D.C., became a father in August but we don't know if it was a boy, girl, or twins. Ray Brown, of the Scarsdale Browns, is the father of a second daughter, Leslie Elisabeth. Don Burke, recently moved from Texas to Manchester, N.H., and has a son, Richard, to occupy the new ranch house he reports he has built. Stu Edgerly, who is breaking records selling cameras and instruments in Long Island, reports the arrival of Stuart Edgerly, 3d; Stu Grandfield's second daughter, Sally, arrived early this year in Burlington, Mass. John Green advises of the arrival of Dana Winslow in April (John is living in Webster, N.Y.). Alan Gruber, who is occupying his time with nuclear development in White Plains, N.Y., became the father of James Mark in December of 1951.

Ted Heuchling, a neighbor of mine in Concord, Mass., is the father of Donna Annette, aged 11 months. Leo Malloy, who is doing design engineering in Saugus, Mass., reports the arrival of his first heir,

Robert Michael. We are a little late in recording the arrival of Lou Martin's daughter, Mary A., in 1951. Lou is working at M.I.T. and is part of a large group of the Class of 1946 now living in Concord, Mass., including Jim Craig, Ted Heuchling, Gene Parish, and myself. Incidentally, the Sieberts now have two boys, Charlie, two years, and Tommy, six months. Anthony Sabelli, who is writing insurance and living in Norwood, Mass., is the father of a second daughter, Deborah D. Bob Wentsch, testing airplane engines on Long Island and living in West Hempstead, N.Y., is possessed of a male heir, Robert M., now about a year old; and Jim Goldstein, who was recalled to active duty in the Navy and is now building wind tunnels in Washington, is the father of Roger Neal.

The questionnaires also brought in a lot of other news, and we'll fill all the space allowed with it. Tom Donnelly reports that he is now practicing law in Pittsburgh, after receiving his L.L.B. at Michigan, in 1950; he also informs us that other renegades who drifted to the law are Chuck Hansen, currently practicing law in New York City, and Larry (Bates) Lea, practicing in Chicago. Larry sends his own report that he is enjoying the legal life in the Windy City, keeping one of the oil companies out of trouble. Another would-be barrister is Tom Habecker, who is working in the Patent Office in Washington and taking a law course; Tom celebrated the arrival of his third offspring, Carol, in April. Don Wallace received his law degree from Cornell in 1951, and is now confounding clients in New York.

Larry Body sends a long report of his travels in the U.S. Navy, on aircraft carrier and battleship duty (on the *Missouri* when she went aground), and finally to flight training, from which he received his wings as a Naval aviator. He is with a fighter squadron in Florida; he also advises of his marriage to Virginia Nielsen (Marsh Corbett's wife introduced them) and of the arrival of a daughter two years ago. Another Navy report comes from Bill Schield, who was recalled last spring and is now in Pusan, Korea, awaiting rotation to Japan and the arrival of his family from Milwaukee, where he was living before he donned the Navy blue. Another seafarer is Carl McDonald, who graduated from the Naval Academy and is now on submarine duty, after a two-year taste of destroyers; Carl married the former Mavis Fox of Kezar Falls, Maine, in March of 1950.

Louis Wadel is now in Dallas, Texas, and reports that he is doing systems engineering in an aircraft plant there. Another convert to the Lone Star State is Glen Dorflinger, who recommends it as God's country and the land of opportunity, and extols the virtues of Houston. From a long letter sent by Al Little, we can report that he is doing aeronautical experiments at the Naval Air Center in Philadelphia; Al was expecting his first offspring in July, and also reports receipt of an M.S. degree from Pennsylvania and present work toward an industrial management degree. We also have a Naval doctor, Jim Bennett, who received his M.D. from Northwestern in 1949, was

called to active duty in 1951 and is now at sea, looking forward to discharge in February.

Ed Richardson is now in Dover, Del., working as a plant engineer, and applying all the added knowledge he gained in a one-year return to the Institute. Fred Fuller is out in Glen Ellyn, Ill., as a sales engineer for machine tools and parts; when heard from, he was earnestly pushing Senator Taft's candidacy as one of the successful young political figures of Illinois. Russ Foust has rediscovered Cambridge as a haven after serving time in Wilmington, Del., and Houston, Texas, and vows that the consulting engineering work he is now doing is a "one in a million" job. Another traveler is Morris Chomitz, who spent several months touring Japan introducing a new rayon spinning process; he is now living more sedately as a chemical engineer in Philadelphia.

Bill Peirce is keeping the younger generation on the straight and narrow as a member of the faculty at Tabor Academy in Marion, Mass.; Bill took a master's degree in mathematics at the University of Wisconsin in 1951. Roger Bart (Dr. Bart to us) is now engaged in chemical engineering research in Lakeland, Fla., having deserted the New Jersey meadows for the sunny South.

Others of our wandering classmates who have reported their whereabouts are Ned Tebbetts, living in Waban, Mass., and juggling figures as a life insurance actuarial associate; Dick Rauch, engineering the production of electric storage batteries in Philadelphia; Bill Rapoport, who is living in New York City and working as a technical representative of a chemical firm; Preston Parr, Jr., now an assistant director of research at Lehigh University in Bethlehem, Pa.; Ernest Spence, teaching science to budding junior high school brown-baggers in Reading, Mass.; Howard Auerswald, located in Springfield, Mass., who has worked his way up to vice-president of the chemicals corporation he is with; Walt Backofen, now an Assistant Professor of Metallurgy at the Institute; and Bill Brace, who admitted nothing except that he is (or was, at the time he wrote) still at M.I.T.

Reports from other classmates serving Uncle Sam are in from Harland Gray, another Naval aviator who is currently stationed in San Diego, Calif.; Mort Bromfield, who wrote from Kittery, Maine, and reported his present state of involuntary servitude in the Navy with slight profanity; Robert Thacher, a commander now on sea duty with the Navy; and Lieutenant Arthur Borg, stationed at Fort Belvoir, Va., with the Army Corps of Engineers.

A long letter from Bill Semple reports that he was recalled to the Navy in late 1951, and is now assigned to radiological defense activities with the Civil Engineering Corps in New Orleans; Bill was studying for his doctorate at the University of North Carolina before his recall, and was expecting to become a father for the second time this fall. Bill was an official representative at some of the atomic tests in Nevada this year. Eric Newberg is a Naval inspector of Ordnance in Scranton, Pa., and is now a lieutenant commander, USN.

Others of our classmates engaged in academic pursuits are Harry Santangelo, teaching industrial arts at New London High School, Connecticut, and studying for his M.A. at the University of Connecticut; John Marr, who is an instructor at Cheshire Academy in Cheshire, Conn.; John Blottman, teaching in the Electrical Engineering Department at Tufts College; and Ted Malm, an Assistant Professor of Business Administration at the University of California in Berkeley. Your Secretary is now an assistant professor in the Electrical Engineering Department at the Institute, having completed work for his D.Sc. in September. Warren Chapman is currently interning at St. Luke's Hospital in Chicago after receiving his M.D. degree.

Among our sales executives are Bill Jackson, who is eastern sales manager, selling welding equipment, and living in Levittown, Long Island; Bill Herberg, working as a sales engineer in Houston, Texas; and Win Hayward, also a sales engineer in Philadelphia. Among the other captains of industry are Bill McEwan, who is an electronics engineer in Pompton Lakes, N.J., and completing his M.S. requirements at the Stevens Institute of Technology; Hugo Johnson, working as a commercial research analyst in Pittsburgh; Ross Lovington, doing mechanical engineering at the Hanford Works of the Atomic Energy Commission in Hanford, Wash.; Sam Gusman, who received his Ph.D. from Brown University and is now a research chemist; John Taylor, an electrical design engineer for Westinghouse; John Fleming, a manufacturing engineer in Franklin, Pa.; and Ned Spencer, electrical engineering for Wheeler Laboratories, Great Neck, N. Y.

Reports have also been received from a couple of nonengineers: Cal Newman is engaged in managing a grocery chain in Omaha, Neb.; and William Parker is engaged in exploring and developing oil land in San Bernardino, Calif. Marshall Tulin is doing hydrodynamics research for the Navy and is living in Washington, D.C. — WILLIAM M. SIEBERT, *Secretary*, 5 Martha's Point Road, Concord, Mass.

#### • 1947 •

To those hundreds of you who devotedly follow this column each issue, I must, in opening, offer a humble apology for my protracted silence of the past several months. My excuse is perfectly valid — I was on vacation for the month of November; and what with the lags involved between the time when these notes are written and the time they appear in print, this is the first opportunity for resuming gossip. If you will permit a little self-discussion (you have no choice, really), I would merely like to mention that I spent my holiday in England, my first return there in three years; and had, as we would say, a simply smashing time. Loafing in the Hertfordshire countryside, even though November weather is notoriously poor and this time was no exception, was idyllic. And the almost daily trips into nearby London for diversion completed a near-perfect holiday. While in England, I didn't neglect my Tech affiliation and spent several hours with Gene Rubin '45,

who is studying for his Ph.D. on a Fulbright fellowship at the Imperial College of Science and Technology in London. Gene and his wife entertained me at dinner one evening, and then one afternoon I joined Gene at his office and talked shop for a time.

On my return here, I expected to find my desk piled high with correspondence from the faithful, but I must admit that the takings were slim indeed. A brief note from Gene Woestendiek reads: "I haven't had much chance to report much in the way of news to The Review these past few years, but I have enjoyed reading the class notes. It makes me very happy to be able to report at this time that I am engaged to Adrienne Ziver of New York City." Also had a card, shortly before I left, from the Pete Portmanns, announcing the birth of their second child. Unfortunately, I blush to admit that I have misplaced the announcement, and can't furnish further details.

It was quite a surprise to return to the office — Aero-Elastic and Structures Research — and find that Dick Knight had been newly appointed to the post of manager of the organization. It would seem that I am getting out just in time. Starting the first of the year, I am joining the consulting firm of Allied Research Associates, Inc., in Boston. The firm was organized a little over a year ago with Larry Levy '48, as president and Ed Dytko as general manager. It seems, however, that I am entering a Class of 1947 environment there also, as on the engineering staff in addition to Ed, are Dave Knodel, Art Roberts, and Howie Zwemer. And while we're speaking of change, now is a good time to mention that Bob Clement, formerly a technologist at the Wood River, Ill., refinery of the Shell Oil Co., has transferred to the staff of the Shell Development Company in Emeryville, Calif.

In the category of visiting fireman is Turgut Giray, a lieutenant commander in the Turkish Navy, who is spending some time at the Portsmouth Naval Shipyard, undergoing an indoctrination course in the improved methods of ship repair. Another military classmate, Milton P. Barschdorf, has been promoted to colonel in the U.S. Army, and is serving as chief of the United States military mission to Bolivia. Colonel Barschdorf received his S.M. with '47.

In closing, the "social-notes-from-all-over" division: Engaged are Chuck Hoover and Erna Floretta Schneider of Maplewood, N.J.; and wed are John Murphy and Helen M. Connor of Malden. Now please write long and often, so that I won't have to talk about myself so much in order to fill up space. Cheerio for now. (*sic!*) — CLAUDE W. BRENNER, *General Secretary*, 1470 Beacon Street, Brookline 46, Mass.

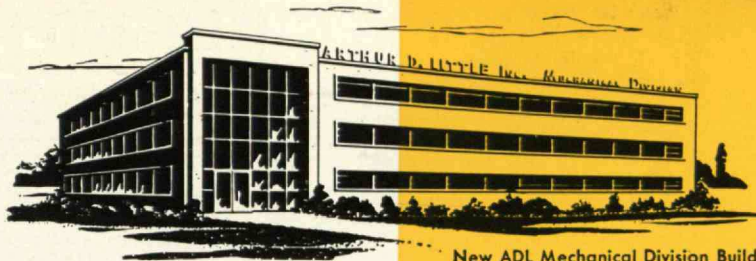
#### • 1952 •

This month being a short month, this column will be short. No news is good news. I assume that the Class of '52 is doing very well. A rose is a rose is a rose. If all this means something to you, you're too far gone.

Reports from the writing precinct: Art



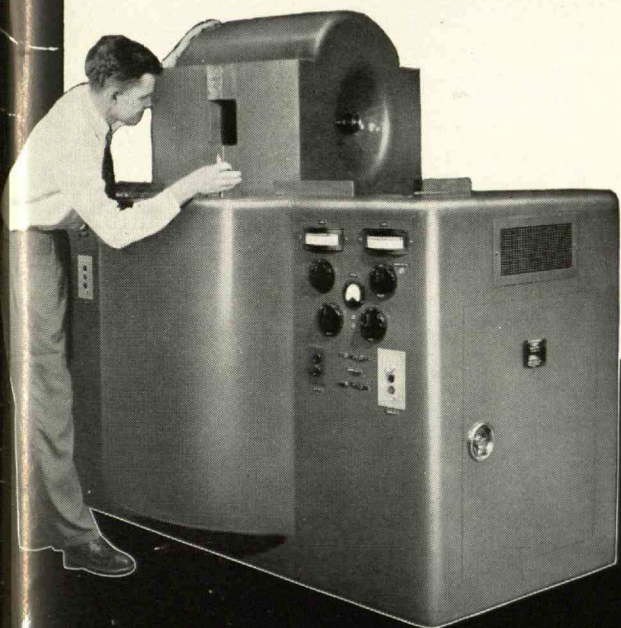
Little else for the present. Please write, as I'm running out of material. This column is yours and consists of your contributions. — STANLEY I. BUCHIN, *Secretary*, 150 Tryon Avenue, Englewood, N.J.



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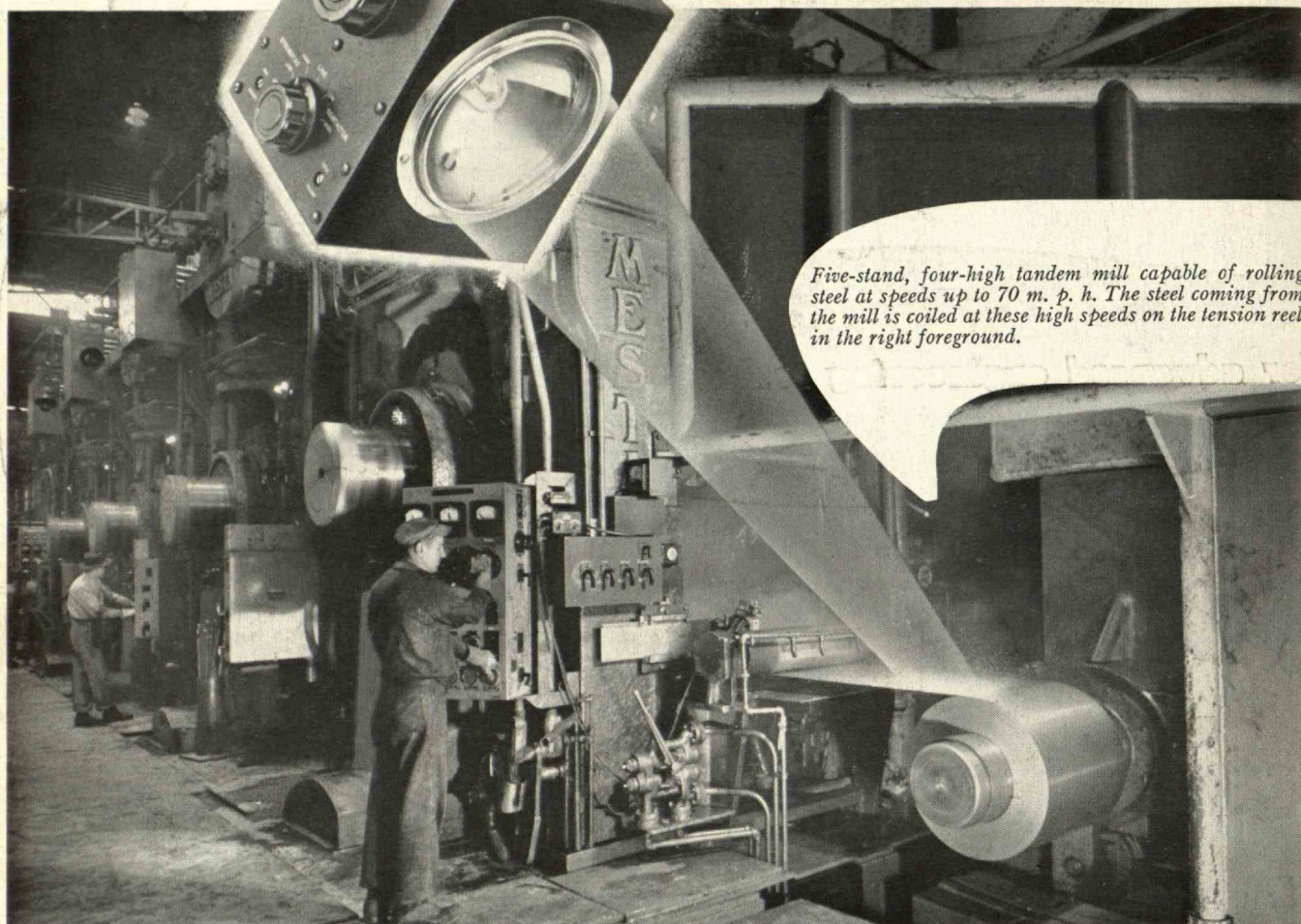
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